Volume 89 Number 4

STEEL

For forty-eight years—IRON TRADE REVIEW

PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE

This Week in Steel

WHEN a motorist tries to take a sharp turn at 50 miles an hour and later surveys the ruins in the ditch, it is just too bad; he does not expect the most expensive car built to stand up under such punishment. But when the navy, testing its new 10,000-ton cruisers, speeds them up to 32 knots and puts their helms over sharply, cracking their cast steel sternposts, the hurried reader of newspaper accounts might deduce that the foundries had let the navy down. However, both an assistant secretary of the navy and a foundry expert concur in a coroner's verdict of faulty design (Page 18). For an excellent specification followed by three private and two navy yards to result in identical failures indicates parsimony in the use of metal.

Quality Also the Priceless Ingredient of Steel

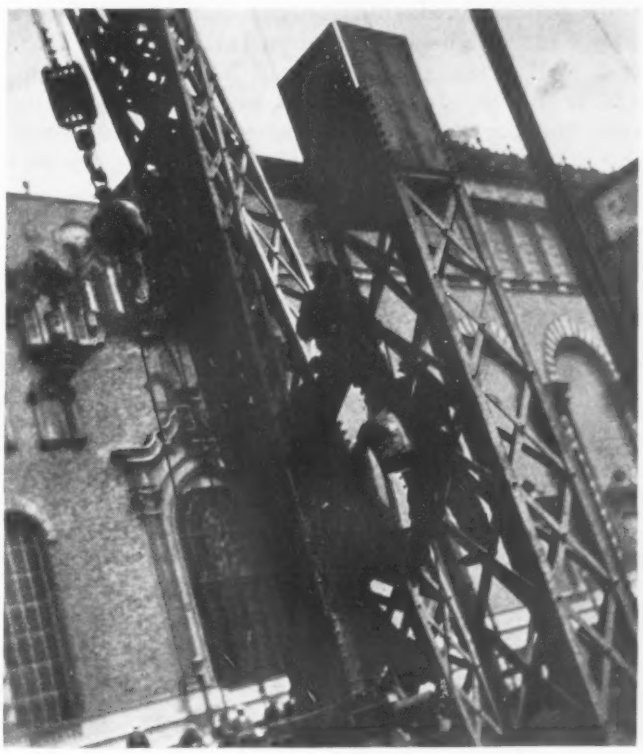
Steel founders, like manufacturers of rolled steel, are tireless in their quest for quality. Take, for example, steel castings for high-pressure, high-temperature service (Page 31). There must be no internal defects; metal must be dense and homogeneous; special heat treating is desirable. Only by close control of metallurgical and molding practice can confidence-building castings be produced. . . . In the enhancement of rolled steel, vanadium has proved an able and willing agent (Page 33). Not only does it scavenge, insuring sound metal, but as an alloying element it also affords lightness with increased strength, contributing much to the nimbleness of today's automobile.

Steel Houses—a 3,000,000-Ton Market

Alloy steels, including the new stainless and rustless varieties, may be the aristocrats of the steel family, but on the balance sheet it is tonnage that counts, and the more colorless, plebeian carbon steels form the broad base of the industry. Increasingly is it emphasized that the construction industry offers the greatest opportunity for expanding the demand for carbon steels. . . . In Cleveland, recently, the arc-welded frame of a $12,500 house (excluding the lot), comprising standard shapes cut to length and delivered to the job like lumber, cost $6744, only $24 more than wood framing. Were all residences to be built in this manner (Page 34) a market for 3,000,000 tons of shapes annually would be created.

Claims Russia Only a Red Bogey Man

Save possibly on the seaboards, this expanded market for small shapes should be wholly a domestic one. . . . The fear of Russia being a competitor in steel, in Europe or the United States, is a bogey, declares an American engineer (Page



Browning, N. Y. C.

"Spirit of Construction": A steel scene with a climbing act in the building of the new Earl Carroll theater, New York

Wide World Photo

Majesty of State and Steel: Building the new Lambeth bridge over the Thames, London. Parliament buildings on "the embankment"

19) now augmenting his forces to expedite the Magnitogorsk project in Siberia. This 8-blast furnace, 14-open-hearth steel furnace works could produce rails until worn out and still not supply all of Russia's transportation needs. . . . At this Russian plant, located hard by a mountain of magnetite, there will be no necessity for sintering ore (Page 36), for years an accepted practice in the East and now more widely resorted to in the Middle West.

Stresses Changes—Builds Up Backlog

It is a General Motors engineer who is preaching the doctrine of change, of keeping people reasonably dissatisfied with their mechanical appliances, but it is Chrysler who appears to be heeding this advice. While other automobile manufacturers are sinking into the mire of midsummer inertia, Plymouth, emphasizing radical departures in the low-priced field (Page 25) is behind in its orders. . . . It is rumored in Detroit, (Page 25) that some manufacturers who expected to observe the moratorium declared by the National Automobile Chamber of Commerce on midyear models may announce changes in the fall, provided the retail market warrants.

And Now a Pipeline Is Launched

Laying a pipeline over rough terrain may present difficulties, but consider launching a 16-inch line 3000 feet long! When a Pacific Coast interest proposed to connect its storage tanks on shore with its tanker anchorage at sea (Page 37) it built a narrow-gage track, welded the line on narrow-gage trucks, and when completed a tug passed a line to one end and towed it out. . . . Bethlehem Steel exemplified the broad-gage outlook of the steel industry in the present period of stress when it threw a lifeline (Page 16) to a bank in one of its mining communities and safeguarded funds which were largely those of Bethlehem employes.

Fuel Rates Up, on Differential Basis

When the railroads in June proposed a 15 per cent advance in freight rates they reserved coal and coke for special treatment. Last week, in supporting their plea before the interstate commerce commission, they disclosed their hand (Page 15); they intend raising basic fuel rates 15 per cent, then adding this amount in cents per ton to related rates. What the steel industry thinks of this will be told the commission beginning Aug. 31. . . . While the commerce commission last week was attempting to adjust freight rates, other departments were conferring (Page 16) with soft coal labor leaders, seeking peace for this troubled industry. . . . Peace for a troubled bar market may flow from the establishment (Page 17) of Detroit as a base.

If 1931 Patterns 1921, July Is Low

Nineteen thirty-one thus far bears all the earmarks, in production and price, of duplicating 1921, but on a slightly higher plane (Page 27). This hypothesis makes July the low month in output, with an upturn scheduled for August. Unquestionably, the July steelmaking rate (Page 47) is undercutting even that of June, but hope is high that with August will come improved demand. . . . Jealously has building guarded its leadership of the finished steel markets; this week it revives a 58,700-ton bridge project at New Orleans (Page 52) to supply the outstanding attractive business. . . . Foreign news in steel (Page 67) is that France continues anxious but hopeful, Belgium is bidding on moderate inquiry from India, the British mills are maintaining domestic prices.

Proving Depression Is Only Transitory

Depression and unemployment, the patent office at Washington has learned (Page 16), have stimulated inventive genius to seek a record number of patents. Likewise the steel industry, in a spirit of anticipation, is bettering its position. At Chicago, a plate mill believed to be the largest, capable of rolling 92-inch plates up to 140-foot lengths, at 350 to 700 feet per minute, has just been completed (Page 71). From ingot to finished plates without reheating is possible. . . . Progress also has been made in developing tantalum carbide tools (Page 35).

Roads Now Ask Rate Rise on Coal, Coke; Pro-Hearing Ends

WASHINGTON—When the railroads June 17 formally petitioned the interstate commerce commission for a 15 per cent advance in freight rates they excluded fuel, noting that they would seek "such adjustments in the case of coal and coke as will preserve existing differentials."

At last week's hearing, when proponents of the advance had their day before the commission, Roy S. Kern, of Pittsburgh, chairman of the coal and coke committee of the Central Freight association, proposed that the 15 per cent rise be applied to basic rates on coal and coke. The result so obtained would be added to related rates, thereby maintaining existing differentials.

On beehive coke rates, Mr. Kern explained, the advance if granted will be handled by raising the Connellsville district rates 15 per cent and adding the amount of the advance, in cents per ton, to all related rates.

Mr. Kern stated that on lake cargo shipments to Lake Erie ports there will be an increase of 26 cents, plus 1 cent, or an increase of from 8 to 9 cents in the handling charge. As to lake cargo shipments to Lake Ontario ports, the increase will be 27 cents, including the dumping charge.

Opponents Given Opportunity

He said that rates on soft coal from northwestern Ohio, northeastern Indiana and lower Michigan will be handled by applying the 15 per cent increase to the inner crescent group rates. Amounts so obtained will be added to rates from related districts which include the outer crescent and Ohio districts.

As to the territory in the southern half and northwestern quarter of Indiana and Illinois, the 15 per cent increase, Mr. Kern stated, will be effected by observing the inner crescent district rates as the basis.

With arguments in favor of the advance ended, any opponents of the increase who are ready to go on the stand at this time may be heard. However, as previously announced, Aug. 31 is the formal date for presentation of testimony in opposition and opponents at present unprepared will be heard on the later date, according to the announcement of Commissioner B. B. Meyer, who presided.

Representatives of the railroads told the commission that despite the most rigorous and the greatest operating efficiency on record, the American railroads have not been able to make a fair showing during the past decade and their future ability to serve the public adequately is seriously threatened unless additional income is forthcoming.

Dr. Julius H. Parmelee, director of the bureau of railway economics, presented a statistical picture detailing the account of the railways' present financial condition, their declining rate of return, the trend of their traffic, their performance with respect to efficiency and economy of operation, the status of their outstanding securities as to maturity, and the relation between net income and fixed charges applying to all Class I railroads.

Association President Testifies

During the course of his testimony, Dr. Parmelee stated that "the total amount expended for material and supplies in 1929 was $1,329,535,000 and declined to $1,038,500,000 in 1930. During the first four months of 1931 railway purchases of materials and supplies totaled $298,000,000, while the corresponding total for four months of 1930 was $419,000,000."

Basing his opinion on more than fifty years' experience in railroad work, R. H. Aishton, president of the American Railway association and chairman of the association of American Railway Executives, testified that in his opinion it is in the best interests of the people as a whole to keep the railways in a position where their credit is sound and where required capital is available. Mr. Aishton spoke of the increased efficiency of the roads.

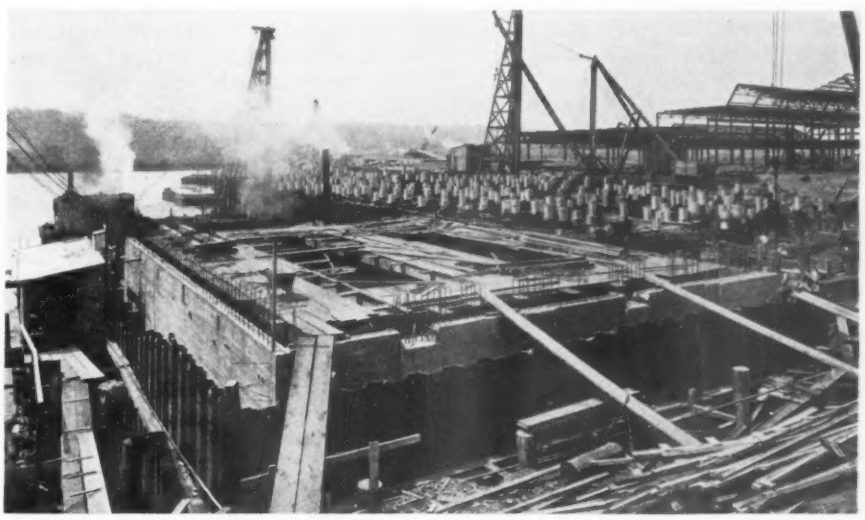
"With respect to the items of products of mines," he said, "for instance, if there had been no increase in the actual tonnage loaded per car, 1929 compared with 1920, it would have required the movement of 1,077,505 more carloads to have handled the 1929 tonnage than were actually used."

"Purchases Were Curtailed"

Stressing the "serious emergency" now confronting the railroads, J. J. Pelley, president of the New York, New Haven & Hartford railroad and chairman of the special committee of presidents representing the eastern group carriers, declared that "the railroads are not proposing an increase in their freight revenues in an attempt to escape their fair share of the general depression." He said that last year "purchases of materials and supplies were curtailed in every way possible."

Mr. Pelley said that "no one can predict with any degree of assurance when a definite upturn in business will begin, or the rate of progress which improvement will make when it starts. When business does revive, the railroads must under the law, and in fairness to the public and themselves be ready to handle all traffic in the efficient manner to which the country has become accustomed."

The present railroad situation was characterized as a potential threat to the entire financial and industrial structure of the nation, in the testimony presented by W. R. Cole, president of the Louisville & Nashville railroad and chairman of the group



AS HENRY FORD FORTIFIES HIS POSITION IN PACIFIC NORTHWEST
In the foreground, sheet piling supplied by Germans protects the foundations of the oil house under construction as part of the new Ford Motor Co. assembly plant on Duwamish waterway, Seattle. In the background is the structural steel of the main assembly building. The project involves 3300 tons of structurals, 1750 tons of reinforcing bars, 135 tons of piling and is to be completed Dec. 1

representing the southern carriers.

The decision to ask authority for an advance in freight rates was asked, H. A. Scandrett, president of the Chicago, Milwaukee, St. Paul & Pacific railroad, representing the western carriers, stated, "with great reluctance and only after full and most careful consideration. The reluctance was not because of any doubt as to the need of additional revenues. That need had been clear to all of us for many months. Some of us, however, hoped that we might be able to weather the storm and avoid increases in transportation charges."

Andrew H. Brown, assistant transportation commissioner of the Cleveland chamber of commerce, stated that "we do not believe that a general rate increase, if uniformly applied, will stifle the movement of any really important commodity."

Mr. Brown said, however, that "we do not approve the proposal of the rail lines in its entirety. We oppose the differential theory basically. It is always unfair to some and unduly favorable to others." He told the commission that he had been authorized by the Cleveland association "to appear in this case and support the carriers' petition for a general freight rate advance, subject to a qualification which I shall make later" and which dealt with the matter of differentials.

Illinois Manufacturers To Study Rate Rise Data

Chicago—Illinois Manufacturers' association directors have concluded to report that no definite decisions should be reached by the association on the proposed increase in freight rates until after testimony in support of the application had been presented by the carriers and other interested parties.

Counsel of the association was directed to attend all hearings in Washington and to enter an appearance of the Illinois Manufacturers' association as a party to the proceedings. The railroad and traffic committees will continue to study the subject and will resubmit the proposal to the directors for final disposition.

Bethlehem Acquires Bank To Protect Employes

Bethlehem Steel Corp., Bethlehem, Pa., has taken over the capital stock of the Farmers & Merchants bank, Reedsville, Pa., to protect depositors, more than half of whom are employes of the Bethlehem Mines Corp., a Bethlehem subsidiary. Capital stock amounts to $25,000; and the deposits, $393,000. Two banks at Kingwood, Pa., in the same district, closed recently. J. P. Benger, Bethlehem, Pa., and treasurer of Bethlehem, has been made president of the Reedsville bank.

Milling Machines Shown by Kearney & Trecker Corp.

Kearney & Trecker Corp., Milwaukee, manufacturers of milling machines, has concluded its own milling machine show, which drew an attendance of 900, including a number of visitors from England and Canada. Special trains brought Chicago visitors to the show. The exhibition began July 13, with a conference of the company's sales representatives, and on July 15, 16 and 17, the exhibition was open to the public.

The company's new line of knee-type milling machines was introduced at the show and the exhibits numbered 42. Included were demonstrations of precision tool room equipment, where extremely close limits are required, and new machines for tungsten carbide operation. The total value of the exhibit was at least $200,000, individual machines being priced from $2900 to $3700. Several of these milling machines were sold from the floor.

For the exhibit, the plant was equipped with loud speakers so that all machines could be described and put into operation simultaneously. Various groups were escorted to a glass-enclosed display room which was made comfortable by a special cooling system, where a breakdown of the features of the new milling machines was explained by officials of the company.

Steel Corp. Gets Drawback

Washington—Treasury department has announced the allowance of drawback on steel products and galvanized sheet and wire products manufactured by various subsidiaries of the United States Steel Corp. with the use of one or more of the

Further Coal Conferences Probable; Business News of Week at Washington

WASHINGTON—Further conferences on the bituminous coal situation appear probable, following separate meetings of operators and representatives of the United Mine Workers with Secretaries Doak and Lamont. The United Mine Workers seek a national conference with operators to obtain recognition. Certain operators are more inclined to treat with this organization, since some headway has been made by the radical National Miners Union.

□ □ □

Commissioner of Patents Robertson has announced that his office handled a record number of patents during the fiscal year ended June 30.

□ □ □

Hearings have been concluded before the interstate commerce commission by proponents of the 15 per cent freight rate increase for the railroads of the country. Opponents of the increase will be heard formally beginning Aug. 31.

□ □ □

Federal trade commission has announced its acceptance of trade practice rules for the steel office furniture industry. The rules relate to price discrimination, secret payment of rebate, giving money to representatives of competitors' customers, inducing breach of contract, enticing employes of competitors, false advertising of grade or quality, shipping on consignment with intent to injure a competitor, defamation of competitors, and selling below cost to injure competitors.

□ □ □

Output of aircraft, engines and equipment in 1930 for both civil and military purposes was valued at $61,211,197, according to the department of commerce. Last year's production included 3437 airplanes, parts valued at $7,211,992, 4356 engines valued at $17,267,793 and engine parts which were valued at $5,128,261.

□ □ □

By proclamation of the minister for trade and customs of Australia, galvanized iron and steel plates and sheets, whether corrugated or not, may again be imported into that country. Importation of these commodities was prohibited effective Oct. 4, 1930, except for goods then in transit.

□ □ □

Buildings just below Washington, on the east bank of the Potomac river and once occupied by the disbanded Washington Steel & Ordnance Co. are being razed. The company was organized in 1911, principally to manufacture projectiles. It once included three basic open-hearth furnaces and had an annual capacity of 40,000 tons. The company was dissolved in 1921.

following: Ferromanganese, spiegeleisen, zinc, or spelter imported as such or produced in bonded smelting and refining warehouses or under drawback regulations.

Eaton Quits Sheet & Tube; Bishop His Successor

Youngstown, O.—Cyrus S. Eaton, of Cleveland, formerly executive of Continental Shares Inc., Cleveland investment trust, with large steel holdings, including shares of Youngstown Sheet & Tube Co., retired July 20 as a director and a member of the executive committee of Sheet & Tube.

George T. Bishop, Cleveland industrialist and financier who succeeded Mr. Eaton as head of Continental Shares, becomes a director of Sheet & Tube. Frank Purnell, president of Sheet & Tube, is now a member of the executive committee.

It is not known whether S. Livingstone Mather, Hugh B. Wick and George Brainerd, Mr. Eaton's associates on the board, will remain. They were closely associated with him in his efforts to prevent the merger with Bethlehem in 1930.

Spang Plans New Mill

Spang-Chalfant & Co., Pittsburgh, are understood to have plans under way for the construction of a new electric welding pipe mill at the Ambridge, Pa., plant. The company at present is engaged in the production of seamless tubes up to 15 inches in diameter at Ambridge and produces black and galvanized buttweld and lapweld pipe at its Etna, Pa., plant. Construction of the new mill at Ambridge is expected to be started in the near future.

National Tube To Expand?

Lorain, O.—Reports persist that a large construction program is to be undertaken by the National Tube Co. in Lorain. Additional open-hearth steel furnaces and rehabilitation of some of the pipe and tube mills are believed to be in prospect.

Morse Chain Sales Improve

Morse Chain Co., Ithaca, N. Y., division of Borg-Warner Corp., Chicago, reports sales of second quarter were 19 per cent above those of the previous three months, according to C. S. Davis, president of the parent organization.

At Massillon, O., the Republic Steel Corp. is removing scale from alloy steel by the use of shot, applied with a machine developed by the Pangborn Corp.

Detroit Now Base for Bars, $3 Per Ton Over Pittsburgh

DETROIT, probably the largest steel bar consuming center in the United States and long the vortex of turbulent competition, has become a base on carbon steel bars, the base at present being $3 per ton over Pittsburgh. With bars quotable now at 1.60c, Pittsburgh, the Detroit base thus is 1.75c.

From Pittsburgh, Cleveland and Chicago by rail, and more recently from Chicago, Cleveland, Buffalo and Conneaut by water, bars have come into the greater Detroit consuming area, with as many different freight rates as there are shipping points. In the past few weeks the two new merchant bar mills of the Great Lakes Steel Corp., subsidiary of the National Steel Corp., Pittsburgh, have been completed.

Only Detroit District Benefits

Figuring the base at 1.60c, Pittsburgh mills with a freight rate of 26½c have put bars into Detroit at a delivered price of 1.86½c. Cleveland, quoting bars at 1.65c, Cleveland, with a freight rate of 20½c, put bars into Detroit at 1.85½c. The water rates from Cleveland, Chicago, Buffalo and Conneaut—the latter a shipping port for Pittsburgh—have varied.

The new base works to advantage only in the Detroit district. For bar stock delivered to Grand Rapids, Lansing, Flint and other up-state Michigan consuming points on either a Pittsburgh, Detroit, or Cleveland base are virtually the same. Up-state Michigan freight rates from Detroit are exceedingly high, considering the short haul. However, the importance lies in the fact that Detroit users can now purchase bars at approximately $2 a ton under the previous figure they were paying.

Sellers of bars in the Detroit district, while not as yet completed in their revision of contracts and quoting under the new base point, are reconciled to the local base and now outside mills and the local bar mill alike are making the new figure.

"Detroit base" has been an expectation for some time due to the large consumption at that point, and now a producing capacity. While strip is produced by the same Great Lakes Steel Corp. mill and sheets have been manufactured in Detroit by the Michigan Steel Corp. for several years, they have yet to undergo the revised base and are still being quoted on a Pittsburgh base.

June Steel Employment Reduced 4.8 Per Cent

Washington—Employment in the iron and steel industry in June decreased 4.8 per cent compared with May, according to the bureau of labor statistics. The automobile industry reported 6 per cent fewer employes and foundry and machine shop products, 4.2 per cent.

Under the pockets of one of the Great Northern railroad's four steel and concrete iron ore docks, at Superior, Wis. An unusual view, showing the walkway for dock workers. In the great pockets overhead iron ore, mainly from the Mesabi range, is mixed, carloads of various grades being deposited so that the resultant shipping product conforms to desired chemical analysis. Great Northern docks at Superior have storage capacity for 441,000 *tons*

Faulty Design, Not Castings, Caused Sternpost Failures

CAST steel sternposts of five of the eight 10,000-ton cruisers recently completed by the navy in accordance with the Washington and London naval treaties failed when subjected to rigorous tests at 32 knots per hour.

The five cruisers figuring in the failure—the CHESTER, CHICAGO, LOUISVILLE, AUGUSTA and NORTHAMPTON—were built one each by the New York Shipbuilding Co., Newport News Dry Dock & Shipbuilding Co., Bethlehem Shipbuilding Corp., Puget Sound navy yard and Mare Island navy yard.

The sternposts used by the three private yards were purchased from the same foundry. One navy yard poured its own casting, while the other purchased its casting outside. Assistant Secretary of the Navy Jahncke has cleared the builders and foundries of blame, but first reports left the door open to the inference faulty castings had been incorporated in the cruisers.

In a statement to STEEL, Dan M. Avey, editor of *The Foundry*, says:

"The specifications for steel castings for such severe service as sternposts are known as class F, special, and carry the most rigid physical and chemical requirements. Phosphorus and sulphur both are held to a maximum of 0.05 per cent.

"The tensile strength requirements are 85,000 pounds per square inch, the yield point is 53,000 pounds per square inch, with an elongation of 22 per cent in 2 inches, a reduction of area of 35 per cent and cold bend of 120 per cent.

"Steel of this nature is adequate and can be made successfully by a great number of steel foundries in this country. Castings of this type are subjected to minute inspection, and test methods are available to assure perfect products. The fact that weaknesses appeared in castings from all sources of supply indicate inadequate design rather than faulty castings."

According to Mr. Jahncke, the defective sternposts resulted from the effort to lighten them and save weight. He said further:

"It must be pointed out that every effort was made for lightness in design of these ships to keep within the treaty limit of 10,000 tons displacement.

"This resulted in drawing the line too fine in the design for the sternposts and although all of the contract built ships but one, successfully withstood the rigorous tests applied during the builders trials, such as, for example, going ahead and backing at full speed and putting the helm hard over in each direction, still, subsequently, while in service weakness appeared in all but one sternpost.

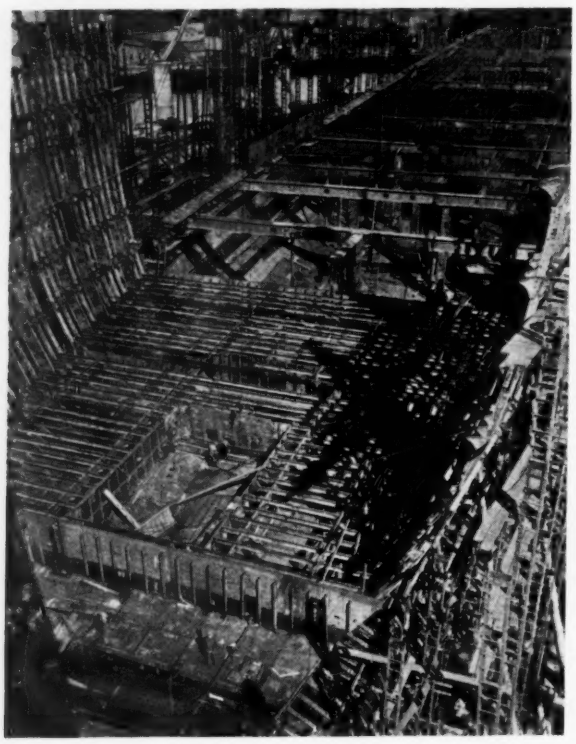
"The navy department will add some weight to the castings and provide for improved attachment to the hull and make these changes as opportunity offers.

"The expense for removal will be borne by the navy in the case of the cruisers built at the navy yards and the cruisers built at private yards where the guarantee period has expired.

"In the case of the cruisers built at private yards, where the guarantee has not expired, these yards have been called upon to bear the cost of replacement.

"The navy department does not wish the impression to hold that there was poor workmanship on the part of the private shipyards which built some of these ships.

"The design of the castings was not only fully approved, but the material and workmanship was subjected to rigid naval inspection throughout the manufacture at the foundry and subsequently during the machining and erecting operations at the builders' yards."



World's largest passenger vessel is being built at the yard of John Brown & Co. Ltd., at Clydebank, near Glasgow, Scotland for the Cunard line. This super-liner will be 1018 *feet long,* 73,000 *tons, cost about* $25,000,000. *With a speed of* 32 *knots it will be able to cross the Atlantic in four days flat. Not to be outdone, the French line recently laid the keel for an* 1100-foot *liner, to cost* $27,000,000 *to* $30,000,000

Wide World Photo

Hardware Men See Better Rural Sales in Fall

Chicago—Sales improvement by about Sept. 1 was forecast at the midsummer meeting of the National Heavy Hardware association at Des Moines, Iowa, July 16, when Louis Williams, Minneapolis, president of the association, stated that sales had been held down by low farm prices in the early months of this year.

It was pointed out that the heavy hardware business in western territory is affected quickly by changes in prices of farm products. Prospects for good crops in the Middle West this autumn, even at low prices, indicate that farmers will be able to purchase needed equipment after harvesting, it was stated.

See Merger Facilitated By Eaton's Resignation

Whether Youngstown Sheet & Tube Co. and the Bethlehem Steel Corp. will merge in a few months, since Cyrus S. Eaton's opposition has faded out with his resignation July 20 from Sheet & Tube's board of directors remains to be seen. From Youngstown, O., comes the information that with Mr. Eaton's retirement from the board, and also from the executive committee of Sheet & Tube, the question is raised as to whether the remaining three so-called Eaton members of Sheet & Tube's board will remain on it. These three are Hugh B. Wick and S. Livingstone Mather, of Cleveland, and George Brainard, of Youngstown.

It is confidently expected by close observers in Youngstown that the merger will take place some time this year. Some claim it is now near consummation.

Another merger rumor appeared

July 20 in a copyrighted dispatch from New York in the *Youngstown Vindicator*. This is to the effect that an option has been taken by the United States Steel Corp. to purchase the Detroit and Weirton, W. Va., works of the National Steel Corp., with which concern the M. A. Hanna Co., Cleveland, is affiliated.

E. T. Weir, chairman of National Steel, is quoted in the article as saying that he does not see why National should be sold. This company was organized in 1929 to acquire Weirton Steel Co., the Great Lakes Steel Corp., of Detroit and the holdings of the M. A. Hanna Co. in various subsidiaries, especially lake ore properties and blast furnaces at Detroit and Buffalo.

Trade Bodies Again Asked To Help with Employment

Washington—Plans for further cooperation of trade associations in stimulating employment in each industry which they represent have been announced by Fred C. Croxton, acting chairman of the President's emergency committee for employment. A number of associations have been co-operating with the committee but further and more specific lines of effort are requested in a letter being sent to leading associations.

"We have turned to trade associations as a natural medium of contact with industry and commerce with confidence that each trade group will continue the most helpful procedures in the present emergency and also will develop policies which ultimately will give assurance of greater regularity of income for all interests," he says.

Building Wages Advance, But Work Declines

Hourly wage rates in the building trades in the United States have continued an almost uninterrupted rise that had its beginning in 1922, according to the National Industrial Conference board, New York. At the end of 1930 the composite hourly wage-rate of 15 building trades, in 23 principal cities, was 27.4 per cent higher than it was in 1923.

Among 15 trades the highest rates in 1930 were paid to plasterers and bricklayers, both averaging $1.70 per hour during the year. The lowest rate was noted for laborers, slightly over 73 cents per hour, and the next lowest, for hod carriers, nearly 97 cents per hour.

In May, 1931, building contract awards were 41 per cent below the 1925-1929 average. "This naturally indicates a heavy falling-off of earnings in the building trades, despite the ascending wage scale," says the board.

More Engineers Speed Soviet Project; No Menace Is Seen

TO SPEED work on the soviet iron and steel plant being built at Magnitogorsk, in Siberia 1200 miles east of Moscow, another party of engineers—the second within a month—has been dispatched by Arthur G. McKee & Co., Cleveland.

This enlargement of the McKee forces results from redoubled efforts of the soviet government to rush the Magnitogorsk plant to completion by 1933. This is said to be doubtful, but considerable production by that time is possible, according to McKee engineers.

Propose 14 Open Hearths

For Magnitogorsk are planned eight blast furnaces with a daily capacity of over 1000 tons, to have an annual capacity of 2,600,000 tons of pig iron; 14 150-ton open-hearth steel furnaces, three 25-ton bessemer converters to be added later; eight batteries of 69 by-product coke ovens each, with a by-product recovery plant being constructed upon design and under supervision of the Koppers Co., Pittsburgh; blooming, billet, rail and structural mills.

Coal for the Magnitogorsk operation will be hauled about 1400 miles from the Kuznetsk basin, where the Freyn Engineering Co., Chicago, is supervising the construction of an iron and steel plant, but the recent discovery of a deposit of anthracite only 200 miles from the tremendous deposits of magnetite adjacent to the Magnitogorsk project may simplify the fuel problem later.

Officials of the McKee company give no weight to the fears of Russian competition with the rest of the world on manufactured goods. Says R. E. Baker, secretary and treasurer of the company:

"Distances are great and transportation is poor in Russia. I am convinced that it will be many years before Russia can take care of her own primary needs and that if the government attempts to ignore those needs it would cost them so much to get their own manufactured goods to their borders that they would be beaten in competition before they started.

"When you realize that this great steel plant at Magnitogorsk, with a steel capacity of 2,100,000 tons of open-hearth and bessemer steel per year, could put that whole capacity into steel rails for the whole life of the plant without producing enough to give Russia a competent transportation system you quit worrying about Russia being any menace to even her industrial neighbors in middle Europe, to say nothing of the rest of the world.

"Economically, neither Magnitogorsk nor Kuznetsk holds any actual or potential threat for the iron and steel industries of Europe, much less the United States. Our firm has designed

Soviet Russia envisions the time when automobiles will be as numerous in that country as elsewhere in Europe or the United States. Modern construction ideas are embodied in this assembly shop of the Nizhni Novogorod automobile plant. Photo—Economic Review of the Soviet Union

and built, in whole or in part, some of the principal iron and steel plants of India and China, and neither of the Russian plants mentioned is ever likely to compete successfully in either of those countries.

"In recent years iron from India has been profitably sold in central Pennsylvania and Cincinnati, and Chinese iron can probably determine the market price on the Pacific Coast even at today's prices. The Magnitogorsk and Kuznetsk plants can be worn out and the immediate raw material supplies exhausted and still leave a considerable future demand for steel in Russia.

"We have now dealt with the Russians on this work for over 18 months. We have had difficulties and disagreements, but no more so than could be expected on any foreign operation. They have always been amicably settled. We have encountered some difficulty in obtaining proper co-operation from the Russians at Magnitogorsk and in getting them to adhere to our designs, but much better co-operation is now being obtained.

"Due to inability of the Soviet to obtain credit in the United States the detail design of all rolling mills was eliminated from our contract with our sanction and consent and given to German firms who supplied credit under state guarantee.

"Although a tremendous volume of construction work remains to be accomplished on the major iron and steel plants now under construction in Russia, the greatest problem of the Russians in respect to Magnitogorsk and similar major projects relate to operation and management. These will prove real problems and I cannot now foresee how they will be met."

Financial News of Steel Industry

GULF STATES STEEL CORP., Birmingham, Ala., had net loss of $520,684 for the first half year against loss of $3537 in the first six months of 1930. In the second quarter net loss was $303,643 compared with net loss of $98,430 a year ago.

□ □ □

American Forging & Socket Co., Pontiac, Mich., has declared regular quarterly dividend of 15 cents on the common, payable Aug. 1 to record July 17.

□ □ □

M. A. Hanna Co., Cleveland, earned 14 cents a common share, against 9 cents in the previous quarter and 47 cents in the June, 1930, quarter.

□ □ □

Transue & Williams Steel Forging Corp., Alliance, O., had net loss of $36,701 in the second quarter, compared with net profit of $23,411 in the same quarter of 1930, before federal taxes.

□ □ □

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., reports for the second quarter of 1931 net profit of $926,604 after all charges, taxes and reserves, equal to 34 cents a share, contrasting with a net loss of $2,885,945 in the first quarter of 1931.

□ □ □

Midland Steel Products Co., Cleveland, earned for the second quarter $431,653, after all charges including estimated federal taxes but before profit sharing. Net for the first quarter was $316,272.

□ □ □

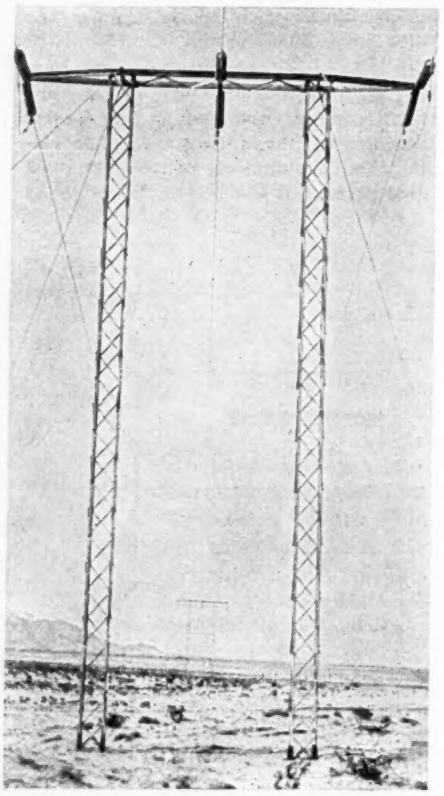
Arthur G. McKee & Co., Cleveland, earned for the first half of 1931 $355,415 after all charges. This compares with $292,810 after similar charges for the first half of 1930. Earnings for the first half of 1931 are equivalent to $4.21 a share. During the first half of 1930 net was $3.47 a share.

Tesla Sees New Power Source Taking Much Steel

A new source of power, which promises a new and practically unlimited market for steel, is announced by Nikola Tesla, whose work in electricity has made his name known the world over. On the occasion of his seventy-fifth birthday he made the announcement that he was working on the development of this new power source.

"I have turned for power to a source to which no previous scientist has turned, to the best of my knowledge," he said. "It will throw light on many puzzling phenomena of the cosmos and may prove also of great industrial value, particularly in creating a new and virtually unlimited market for steel."

While he would not reveal anything as to the source from which he is seeking this unlimited power he asserted the supply will be constant day and night at all times of the year, captured by simple devices of mechanical and electrical features. While at first the cost may be too high Mr. Tesla thinks, this obstacle eventually will be overcome, he believes.



Steel towers like those pictured above, manufactured at the Pacific Coast plant of the International Stacey Corp. at Torrance, Calif., will soon be carrying electric power 193 miles from Virtorville, Calif., to the site of Hoover dam. After the dam is completed, the line will transmit the power generated at the dam

Pig Iron Output Gains in Canada, but Steel Declines

Toronto, Ont.—Production of pig iron in Canada in June was 55,822 long tons, 11 per cent over the 50,511 tons of May, but 16 per cent less than the 66,081 tons in June, 1930.

For the first half year cumulative production of pig iron totaled 299,222 tons, compared with 451,186 tons for the first half of 1930 and 518,557 tons in 1929.

During June one furnace was banked at Sault Ste. Marie, Ont., and one was blown in at Port Colborne, resulting in four furnaces in blast at the end of the month. The active furnaces had a capacity of 1900 tons per day, or 45 per cent of the total capacity of all blast furnaces in Canada and were located as follows: Dominion Steel & Coal Co., Sydney, N. S.; Steel Co. of Canada, Ltd., Hamilton; Algoma Steel Corp., Sault Ste. Marie, Ont., and Canadian Furnace Co., Port Colborne, Ont.

Production of ferroalloys in June at 2740 tons was slightly over the May output of 2540 tons. For the six months ended June, production aggregated 22,884 tons, compared with 44,960 tons in the corresponding period last year.

Output of steel ingots and direct steel castings in June was at the lowest rate for the year, at 55,605 tons, which was 26 per cent under the 75,235 tons reported for May and compares with 95,312 tons in June, 1930. For six months, cumulative production is 461,877 tons, against 636,613 tons last year.

Paramount Bronze & Steel Co., 4-73 Forty-eighth street, Long Island City, N. Y., has been organized to succeed the Paramount Kalamein Corp. The company makes gray iron, brass and bronze castings and operates a machine shop.

Industrial Men in the Day's News

George K. Hoblitzelle, Executive Vice President in Charge of Operations, General Steel Castings Corp.

FOURTH of his line to occupy prominence in iron and steel, he was employed by Commonwealth Steel immediately upon graduation from college.

RISING from a minor position to the vice presidency, he was a member of the committee which concluded negotiations for the merger of Commonwealth with General Steel Castings.

AFTER the amalgamation he first was vice president in charge of the western division, but now is in charge of operations at both plants.

MEMBER of the fourth generation of Hoblitzelles to occupy a prominent place in the iron and steel industry, George Knapp Hoblitzelle was recently made executive vice president in charge of operations of the Granite City, Ill., and Eddystone, Pa., plants of the General Steel Castings Corp., Philadelphia. This appointment was noted in STEEL of June 4.

Mr. Hoblitzelle's father was always connected with the steel castings industry and for the last 18 years of his life was vice president and treasurer of Commonwealth Steel Co., Granite City, which became part of General Steel Castings in 1929. His grandfather was head of the Shickle, Harrison & Howard Steel Co., St. Louis, which generally is credited with producing the first steel castings west of the Mississippi river. His great grandfather was associated with Chouteau, Harrison & Valle Iron Co., which operated extensively in mining and shipping high grade Missouri iron ore in the last half of the last century and which also produced ironclad monitor type boats during the Civil war.

With such a background it was but natural that George K. Hoblitzelle should, upon graduation in 1917 with an A.B. degree from Cornell university, enter the Commonwealth Steel organization. He was born in St. Louis, Oct. 17, 1896, and before going to Cornell was graduated from Smith academy, St. Louis, in 1913. Early in 1919 he was appointed assistant purchasing agent for Commonwealth and in December, 1922, was made manager of purchases and assistant treasurer. In November, 1926, he was elected vice president and manager of purchases, and in January, 1929, vice president and manager of sales.

He was associated with Clarence H. Howard and H. M. Pflager on a committee representing Commonwealth stockholders which successfully concluded the negotiations resulting in the merger of the Commonwealth and General companies. Upon completion of the amalgamation Mr. Hoblitzelle was elected vice president and general manager of the western or Commonwealth division of the General corporation. In addition to being a director of General Steel Castings, he is a director of the St. Louis Union Trust Co. and of several companies outside of the steel business.

He is a member of the American Iron and Steel institute as well as numerous clubs. He is interested in travel, music, shooting, fishing, golf, tennis, and in fact enjoys all outdoor sports.

JOHN C. WILLIAMS, president Weirton Steel Co., Weirton, W. Va., and vice president, National Steel Corp., Pittsburgh has been elected president of the Hanna Furnace Corp., Buffalo, another National Steel subsidiary.

D. M. Eddy, who assumed the duties of president following the death of Charles A. Collins, has been elected vice president, with practically the same executive duties as heretofore, and with headquarters at Buffalo. F. A. Hanlin, vice president, Weirton Steel, has also been elected vice president of the Hanna corporation, and F. M. Hesse, treasurer of National Steel, has been made secretary and treasurer of the Hanna corporation.

E. T. Weir continues as chairman of the board. James Prendergast, president, Susquehanna Collieries Co., a subsidiary of the M. A. Hanna Co., Cleveland, has been elected a director of the M. A. Hanna Co., to take the place vacated by the death of Mr. Collins.

□ □ □

Roger D. Prosser, Thomas Prosser & Son, New York, will sail shortly for Germany, in connection with tungsten carbide and tantalum carbide cutting tools developed by the Krupp interests, which have been represented in the United States by Thomas Prosser & Son for 80 years.

□ □ □

Leon F. Delargey, general pur-

chasing agent, Wilcox-Rich Corp., Saginaw, Mich., for the past two years, has been transferred to the general offices at Detroit. He will have charge of purchases for the company's three Michigan plants, located in Saginaw, Marshall and Battle Creek.

□ □ □

A. Harley, for more than 20 years foundry manager, Daimler Co., Coventry, England, was recently elected president of the Institute of British Foundrymen. Victor Stobie, formerly junior vice president of the Institute, now is senior vice president. He operates an electric steelworks on the Tyne at Dunston.

□ □ □

Prof. S. W. Dudley, Strathcona professor of mechanical engineering and chairman of the mechanical engineering department, Yale university, has rejoined the engineering organization of Westinghouse Air Brake Co., Wilmerding, Pa., in an advisory capacity. He will be assistant to the vice president and will retain his university connections.

□ □ □

William F. Pellenz has been appointed general superintendent of Virginia-Eveleth district, Mesabi iron range, for Oliver Iron Mining Co., Duluth, to fill the vacancy caused by the death of Fred R. Mott. He became connected with the Oliver company in 1904 as stenographer at Hibbing, Minn. By successive promotions he reached by February, 1921, the assistant superintendency of the Eveleth district. When in August, 1928, Virginia and Eveleth districts were consolidated with Fred R. Mott as general superintendent, Mr. Pellenz was made his assistant.

□ □ □

L. A. Paddock, vice president of American Bridge Co., New York, since April, 1927, has been elected president to succeed the late Joshua A. Hatfield, whose death was noted in STEEL of July 9. Mr. Paddock, prior to 1927, had been president of Canadian Bridge Co. Ltd., Walkerville, Ont.

Arthur L. Davis, identified with American Bridge since its organization, has been elected vice president in charge of sales at Pittsburgh. In April, 1927, Mr. Davis was made general contracting manager, with headquarters at New York. He prior to that time had been eastern division contracting manager. A complete biographical sketch of Mr. Davis' business career appeared in *Iron Trade Review*, predecessor of STEEL, July 28, 1927.

□ □ □

M. L. Eckman, welding development engineer, Federal Machine & Welder Co., Warren, O., has sailed for Europe to supervise the installation of his company's welding machinery in France, England, Germany and Italy. Mr. Eckman will assist in training the welding personnel of large manufacturers such as Renault, Citroen, Fiat, Fried-Krupp and others. He also will lecture and do other work of an educational and instructive character.

□ □ □

E. O. Williams, associated for the past 16 years with the transmission asd industrial chain industry in various sales capacities and formerly manager of Howe Chain Co., Muskegon, Mich., has been placed in charge of the Philadelphia office, Bourse building, Philadelphia, of Union Chain & Mfg. Co., Sandusky, O.

□ □ □

John W. Stier, chemist, Edgar Thomson works, Carnegie Steel Co., Braddock, Pa. was recently presented with the United States Steel Corp.'s

John W. Stier

55-year service medal. Mr. Stier was born in Pittsburgh in 1861 and began work for the United States Steel Corp. as refractory boy and assistant chemist at the Edgar Thomson plant in April, 1876. In November, 1878, he became assistant chemist at Pennsylvania Furnaces and Scotia Ore Mines, now subsidiaries of the United States Steel Corp., returning to Edgar Thomson in 1883, where he remained, doing laboratory work, until he reached the corporation's compulsory retirement age, 70, on June 21 of this year.

□ □ □

Alexander Taylor, assistant to the vice president, Westinghouse Electric & Mfg. Co., East Pittsburgh, has been assigned to duties in connection with the company's locomotive contract from the Pennsylvania railroad. His previous work has been assigned to H. C. Thomas, director of manufacturing stocks.

E. R. Norris has been appointed assistant to J. M. Hipple, general works manager.

C. G. Bunnell, formerly purchasing agent at East Pittsburgh, is now general purchasing agent, reporting to the general works manager.

□ □ □

J. S. Ferguson, formerly manager of the Columbus, O., plant of American Rolling Mill Co., Middletown, O., has become blast furnace consultant on the staff of Freyn Engineering Co., Chicago, consulting engineer for the soviet republic. He will be located at Kuznetzk, Siberia, having sailed July 17. Mr. Ferguson had been connected with the American company since 1921. He was transferred to Columbus from its Ashland, Ky., plant, having always been connected with blast furnace operation. He has supervised blast furnace operation since 1914.

□ □ □

T. J. Pace has been appointed assistant to J. S. Tritle, vice president and general manager, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. Since 1926, Mr. Pace has been director of sales. He joined the company in 1902 when the Manhattan General Construction Co., of which he had been assistant general manager, was absorbed by Westinghouse. In 1905 he became manager of the illuminating section and in 1922 manager of the supply sales department, remaining there until 1926 when he again was promoted.

M. B. Lambert has been appointed sales manager in charge of the transportation department, Westinghouse Electric & Mfg. Co. He has been with the company since 1900, chiefly in connection with railroad electrification.

O. F. Stroman has been made sales manager in charge of the industrial department, and R. A. Neal now is sales manager in charge of the central station department.

Mr. Stroman became identified with Westinghouse in 1903, and since 1909 he has been in the industrial sales department. In 1926 he was appointed motor apparatus manager. His 25-year experience has had to do chiefly with the application of electricity to industry.

Mr. Neal has been affiliated with the Westinghouse organization since 1910. By 1920 he had become manager of the switch section, and in 1926 he was appointed switchgear apparatus manager.

Obituaries

CHARLES H. GRADY, 57, manager of the raw material department, Illinois Steel Co., Chicago, since 1919, died July 15. He began to work at the South Chicago works not long after formation of Illinois Steel Co., having been connected with the company for 37 years. For a time he was assistant superintendent of the yard department and later car

distributor but when the raw material department was formed in 1910, Mr. Grady's work became a part of that department and he was made manager. He was regarded as an authority on raw materials entering into steel production, particularly coal, coke, limestone and steel scrap.

□ □ □

Peter M. Boeck, formerly superintendent, Challenge Machinery Co., Grand Haven, Mich., died July 7.

□ □ □

R. Carey May, 69, director, Defiance Machine Works, Defiance, O., and prior to 1908 its European representative, died July 7.

□ □ □

John S. Armour, sales manager, Campbell-Hausfield Co., Harrison, O., builder of agricultural implements, died July 6.

□ □ □

Daniel B. Moore, 53, who retired in 1930 as plant superintendent, Kewanee Boiler Corp., Kewanee, Ill., died June 10.

□ □ □

Charles S. Barry, 56, secretary-treasurer, Murray Co., Dallas, Tex., manufacturer of cotton ginning machinery, died July 8.

□ □ □

J. J. Griffith, identified for many years with the railroad electrification department at Wilkes Barre, Pa., of Westinghouse Electric & Mfg. Co., died July 10.

□ □ □

Walter Hunter Whiteside, former Pacific Coast representative, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., died at his Pasadena, Calif., home July 18.

□ □ □

Warren J. Davis, 75, former president, J. I. Case Threshing Machine Co., Racine, Wis., died July 11 at New York. He resigned the presidency in 1924 and served as chairman until February, 1926.

□ □ □

George Humphreys Gray, 58, purchasing agent, southern division Republic Steel Corp., Birmingham, Ala., died July 17. He was with the Tennessee Coal, Iron & Railroad Co., for 14 years in the purchasing department and for three years with Republic.

□ □ □

Robert W. Pryor, partner in Koithan & Pryor, New York, sales engineers, died at Newark, N. J., July 10. He was graduated from Stevens Institute of Technology in 1902 and became identified with Buffalo Forge Co. In 1909 Koithan & Pryor was organized.

□ □ □

Joseph Eastwood, 69, president and manager of American Forge Co., San Francisco, died at Mountain View, Calif., July 1. Born in England, Mr. Eastwood spent much time in Australia. He located in San Francisco about 40 years ago, organizing one of the first forge companies there.

Steel Furniture Orders At Low Point in May

Orders placed in May for steel furniture at $1,332,693 were the lowest in more than 29 months. Shelving orders, however, hit the year's high mark, totaling $471,416. Shipments in both groups declined. Department of commerce reports the following:

(In Dollars, 000 omitted)

	Business Group		Shelving	
	New orders	Shipments	New orders	Shipments
1930				
May	2,310	2,342	725	751
5 mo.	12,718	12,936	3,844	3,736
June	2,006	2,168	699	705
July	1,840	1,811	596	604
Aug.	1,788	1,985	526	555
Sept.	1,795	1,879	512	497
Oct.	1,855	1,901	534	593
Nov.	1,637	1,673	429	458
Dec.	1,565	1,800	242	468
Year	25,204	26,154	7,382	7,615
1931				
Jan.	1,798	1,797	376	393
Feb.	1,509	1,598	375	356
March	1,521	1,590	416	436
April	1,437	1,487	370	387
May	1,333	1,294	471	375
5 mo.	7,598	7,767	2,007	1,947

May Enameled Sheet Ware Shipments Decrease

At the lowest since December, 1930, shipments of enameled sheet metal ware in May slumped off to 264,953 dozens, loss being confined to the gray and colored classifications. Five-month totals, however, compare favorably with 1930, as department of commerce statistics show:

In Dozens

	Total	White	Gray and Colored
1930			
May	290,617	114,709	175,908
5 mo.	1,614,481	595,408	1,019,073
June	247,861	90,151	157,710
July	213,420	70,718	142,702
Aug.	309,645	89,259	220,386
Sept.	297,622	97,262	200,360
Oct.	329,337	107,553	221,784
Nov.	263,365	79,719	183,646
Dec.	250,568	70,554	180,014
Year	3,526,299	1,200,624	2,325,675
1931			
Jan.	267,232	84,917	182,315
Feb.	289,205	96,812	192,393
March	312,916	103,375	209,541
April	281,339	99,218	182,121
May	264,953	106,091	158,862
5 mo.	1,415,645	490,413	925,232

Sheet Sales Increased in June; Output Reduced

Steel sheet sales in June, 163,599 net tons, reported by the National Association of Flat Rolled Steel Manufacturers, Cleveland, averaged 5453 tons, an increase of 13 per cent over the daily rate in May. June production totaled 147,843 tons, the daily average being 4928 tons, down 24 per cent. Shipments amounted to 156,160 tons, with daily average 5205 tons, a loss of 15 per cent.

Unfilled tonnage as of July 1 was 304,107 tons; approximate finished stock on hand awaiting shipments, 92,395 tons; and approximate in stock unsold, 75,618 tons. Total sheet capacity in the United States for June was approximately 543,400 tons, and the capacity to which the foregoing figures are related is 367,350 tons.

Locomotive Orders Placed Forecast Shipment Gain

Unfilled orders for railroad locomotives in June for domestic shipment touched 84 units, 54 of which were for electric types. This was not only a considerable gain over May but the second high mark for 1931. Shipments in June were down slightly. Principal makers' reports are incorporated in the following to the department of commerce:

	Shipments		Unfilled Orders	
1930	Domestic	Foreign	Domestic	Foreign
June	80	1	335	8
6 mo.	409	14	.....	.....
July	55	1	284	7
Aug.	73	4	229	5
Sept.	65	.....	169	5
Oct.	50	.....	127	5
Nov.	43	.....	88	5
Dec.	44	5	104	.....
Year	739	24	.....	.....
1931				
Jan.	16	.....	90	1
Feb.	15	.....	92	11
March	10	.....	83	12
April	14	1	69	11
May	26	.....	47	11
June	19	.....	84	11
6 mo.	100	1	.....	.....

Galvanized Production in Decline During May

Galvanized sheet metal pail and tub production eased in May to a second low only to January. Output of other ware corresponded as shown by department of commerce companies:

In Dozens

	Pails and Tubs		Other Ware
	Production	Shipments	Production
1930			
May	113,645	107,496	44,405
5 mo.	645,165	648,234	195,529
June	89,982	82,956	40,646
July	91,879	104,096	42,056
Aug.	103,050	103,354	46,730
Sept.	103,177	116,875	38,218
Oct.	130,906	115,185	40,084
Nov.	60,798	68,330	16,061
Dec.	87,140	68,898	21,657
Year	1,309,097	1,307,928	440,981
1931			
Jan.	103,677	133,977	23,716
Feb.	132,781	120,723	34,347
March	146,438	144,637	31,542
April	143,258	140,080	34,929
May	121,413	122,072	28,390
5 mo.	647,567	661,499	152,924

Here and There in Industry

BUFFALO WHOLESALE HARDWARE CO., Buffalo, and Burhans & Black, Syracuse, N. Y., have been merged and will be operated under one management, with W. C. McClaskey, president of the latter, as executive head. Albert W. Weaver and N. A. Taber of the Buffalo company continue as secretary and general manager and as vice president and merchandising counsellor, respectively. The Syracuse executive staff will be unchanged. Both companies are engaged in the sale of wholesale hardware.

□ □ □

Bayley Blower Co., 1938 South Fourth street, Milwaukee, has been placed in the hands of G. C. Bush as receiver, with the consent of its officers. Operation will be continued under the receiver.

□ □ □

Conemaugh Iron Works, Latrobe, Pa., plumbing and heating supplies, has leased 10,500 square feet in the building at 3641 South Ashland avenue, Chicago, for offices and a western warehouse for distribution of its products.

□ □ □

Spang, Chalfant & Co. Inc., Pittsburgh, manufacturer of seamless steel pipe, has opened a sales office in the Russ building, San Francisco, in charge of J. V. Greer, formerly in charge of the sales office at Birmingham, Ala.

□ □ □

Oakley Valve & Foundry Co., 62 Ferguson street, Newark, N. J., has moved to new quarters at 21 Newark way, Maplewood, N. J., and has changed its name to the Dura Motor Valve Corp. There will be no change in management.

□ □ □

Dalzell Bros. Co. and J. V. McClaskey Co., Youngstown, O., sheet metal manufacturers, have been combined under the name of the former. J. J. Dalzell becomes president and J. V. McClaskey vice president. James Dickinson is secretary and treasurer.

□ □ □

Corporate Steel Products Ltd., Montreal, Que., has purchased the plant of the Ottawa Sheet Metal Works, Ottawa, Ont., and will take over its operation. This is in keeping with the company's policy to establish plants in all the leading centers of Canada.

□ □ □

Otis Steel Co., Cleveland, has placed an order with the Aetna Standard Engineering Co., Youngstown, O., for a continuous pickler in connection with its continuous strip mill being built at its Riverside works. The order involves an expenditure of about $100,000.

□ □ □

Delaware Seamless Tube Co. general sales office has been moved from Auburn, Pa., to headquarters of the Allegheny Steel Co. at Brackenridge, Pa. W. J. Teemer and M. M. Steinbrunn, recently located at Auburn, now are situated at Brackenridge. Delaware Seamless Tube Co. is a subsidiary of the Allegheny company.

□ □ □

Mohican Steel Co. has been organized at Brooklyn, N. Y., to conduct a steel warehouse in Meserole street. Hot and cold-rolled strip and sheets will be its specialty. J. L. Sussman is president. He formerly was connected with the Mohegan Steel Co., and recently with Steel & Tubes Inc. A. Baraschick is secretary and treasurer.

□ □ □

Besser Mfg. Co., Alpena, Mich., manufacturer of concrete machinery, has bought the Consolidated Concrete Machinery Co., Adrian, Mich., and will continue operation of the latter at its present location. Eugene F. Olsen, formerly president and general manager of the Adrian company, will continue with the new company as manager and sales director.

□ □ □

International-Stacey Corp., Columbus, O., has transfered E. A. McCallum from the San Francisco offices of the Stacey Engineering Co. to the Pacific Coast headquarters of the former at 410 Subway Terminal building, Los Angeles. All Pacific Coast business dealing with the R-C-W blower division, Stacey gas construction division and the Ideco oil well equipment division will be handled from the Los Angeles office.

□ □ □

Northern Engineering Works, Detroit, has appointed R. E. Condit its representative in the Dayton, Cincinnati and Columbus districts for sale of its traveling cranes, electric hoists and other equipment. He has offices at 705 Gwynne building, Cincinnati, and 901 East Third street, Dayton, O. Hill Equipment Engineering Co., 4620 Delmar boulevard, St. Louis, has been appointed the company's representative in that territory.

□ □ □

Bantam Ball Bearing Co., South Bend, Ind., has introduced an innovation in its field by a series of standard sizes of bearings for heavy duty use. It consists of an organized progression of sizes of roller bearings for rolling mill, rock crusher, mining machinery, paper and rubber mills and similar applications. It is the result of experience in the heavy duty field, which has given data on which to base the progressive predetermined series of sizes.

□ □ □

Central Pattern Works, 1382 Market street, south, Canton, O., has changed its name to the Central Pattern & Castings Co.

□ □ □

Black & Decker Mfg. Co., Towson, Md., has been awarded a bronze trophy by the Baltimore safety council for the best record for the past six months among 79 manufacturing plants in and about Baltimore in the elimination of lost-time accidents. This company had no lost-time accidents in this period. Safety appliances on all machinery, efficient first-aid and measures to produce contentment and eliminate fatigue are among the measures employed to avoid injuries

□ □ □

Mechanical Handling Systems Inc., Detroit, manufacturer of conveyors and power-in-transit trucks, has given a contract to the Austin Co., Cleveland, for design and construction of a plant at Nancy and Eureka streets, Detroit, monitor type, 90 x 160 feet. one story, steel construction. The contract covers design, construction and installation of equipment.. About $100,000 is involved. W. V. Casgrain is president and J. B. Angells vice president of the Detroit company.

□ □ □

Baldwin Locomotive Securities Corp. has been formed as a subsidiary by the Baldwin Locomotive Works, Philadelphia, wholly owned and empowered to deal in the securities and products of the parent company. Samuel L. Vauclain is chairman of the board and George H. Houston president, the same positions they hold in the parent company. This brings the companies in the Baldwin group to 16, in addition to General Steel Castings Corp., in which Baldwin owns a 20 per cent interest.

□ □ □

United States Reduction Co., East Chicago, Ind., recently completed a new building for production of virgin aluminum alloys. The building, containing 6300 square feet, is of steel construction and is equipped with furnaces designed by the company's research department for the alloying of virgin aluminum. Another building will be constructed for production of alloys for the aircraft industry. This will be electrically equipped. In addition to this expansion program, the company's operations cover six acres. Refined aluminum has been the primary product of this company for 28 years.

MIRRORS of MOTORDOM

DETROIT

LIKE the proverbial lone wolf, Plymouth stands alone this month in its week-to-week advancing production schedules. Reminiscent of the feverish production days of two years back comes news at this Chrysler division of a plant addition, not enough steel to fill needs and a large unfilled order book.

Plymouth is making 1000 units daily this week and is hoping to get this figure up to 1200 before long. Thus representing virtual capacity, part of the Dodge plant has been taken over, perhaps the DeSoto unit may follow, and an addition to the Mt. Elliott avenue Plymouth plant will be erected.

Unfilled orders for this "third low-priced car" were close to 21,000 as of last week. For August, about that number is scheduled.

Plymouth's body source—Briggs—has lost some of the body business for the new car. At practically capacity itself, Briggs could not fill a recent rush order for 3800 Plymouth bodies and the overflow was turned over to Murray. Briggs' low stock of steel abetted the impossibility of completing the work. To date, delivery of bodies has been the one hindrance to an even faster tempo in production at Plymouth.

Incidentally, Budd Wheel Co. now has the wheel contract for the new Plymouth.

Plymouth "Ad" Unique

An interesting sidelight on the merchandising of this new model is one of H. L. Rockelman's schemes. Mr. Rockelman, it will be remembered, is a former Ford director of advertising and sales and for the first time is turning his energies to Plymouth.

The Plymouth plant turned out about 2000 "flame cars"—red in color with the features of the model emblazoned on their sides. These were distributed to Plymouth dealers the country over.

Each dealer must put a minimum mileage on the "flame car" over the next sixty days, the only proviso being that the model be driven daily in his particular district. Then, at the end of sixty days, the "flame cars" will be withdrawn or the dealer may have the option of a repaint job. The public, it is thought, will have been made conscious that the new model is upon them.

However, the boom from Plymouth means no increase in aggregate demand for steel as offsetting this upswing have been continued shrinkage in requirements from Ford and Chevrolet.

Ford's Vacation Nearing

Ford gives indication in more ways than one of a virtual 100 per cent shutdown at Dearborn beginning about Aug. 1.

The Ford steelworks has been closed for two weeks, and the manner in which a recent specification for stainless steel was rushed through on delivery points to a cleaning up this month on certain manufacturing lines.

Ominous, too, is the fact that the usual April vacation slips to Ford employes are conspicuous by their absence to date this year. Many observers see in the generally slowing pace at Dearborn that a general vacation is near at hand.

Chevrolet, on the other hand, may be counted on not to close this summer. While production has been tapering, schedules give indication of living up to the company's plan of going through the year uninterrupted.

Most Chevrolet plants are working a four and three-day week, alternately. After June's output of approximately 85,000 cars, July will fall to 60,000 to 63,000 cars, and as it stands now, August will be a 50,000-car month.

For six months of 1931, Chevrolet made 522,000 cars, with a slight edge over the half-million mark to work on toward the 1,000,000 cars it planned for 1931. For five months, Chevrolet turned out 70 per cent of the General Motors total.

Vacations continue to make their inroads on the industry's total production. For the first two weeks of July some 120,000 to 125,000 cars were made, but the latter two weeks will do well to roll up a total of 80,000 to 90,000.

Cadillac-LaSalle went down this week, tentatively to Aug. 10; Graham is quiet; Oakland will receive no material the last two weeks of July; Buick will be closed soon. Others with vacations in force include Continental Motors, Campbell, Wyant & Cannon Foundry Co., and numerous Detroit tool and die shops including National Twist Drill Co.

New Models Plentiful

Speaking of Buick, comes the news, well substantiated, that a new model may be expected by late summer or fall. Though Buick agreed last winter to defer announcement of a new car until January, 1932, there have been so many exceptions to the plan that there is apparently little obligation to adhere. Rumor, unverified, places free-wheeling in the next Buick.

Packard, too, will have a new model, possibly in January. The last-announced car, not a month old, some ascribe to a "tide-over" until the refinements that are expected early in 1932.

Hupp's new series has long been delayed. Hudson-Essex is about to introduce new series under the tutelage of a west coast engineer.

EDITORIAL

Broadening the Service Of Steel

THAT American steelmakers are more keenly interested than ever before in new outlets for steel is indicated by the zeal with which they are studying potential markets. The change in attitude is especially noticeable because only a few years ago many producers were decidedly reluctant to investigate the possibilities for extending the use of steel.

One measure of the attention now being devoted to markets is the response received by STEEL to its series of articles entitled "Large Uses of Steel in Small Ways." From Nov. 22, 1923, when this feature was initiated, down to the current issue, which contains the 196th installment, these articles have brought forth numerous inquiries from makers, fabricators and users of steel. These brief summaries of the application of steel to 196 different products possess a high suggestive value. Utilization of steel for a certain article has suggested to manufacturers applications of steel for other similar articles. Evidence of this is found in letters from officials ranging all the way from chairmen of the boards of some of the largest steel companies to works managers of small manufacturing concerns.

Within the past six months the interest, as measured by inquiries, has increased noticeably. An article on steel reels for cables, which appeared recently, brought forth a surprising number of letters from producers and fabricators, all of whom desired information to enable them to ascertain whether or not their materials are adapted to this product or to determine whether the methods employed in making the reels can be utilized on similar products.

Use of Steel for Framing Residences Gains Ground After Slow Start

Another indication of the current interest in markets for steel is found in the field of steel house construction. Until a year ago only two major steel producers were actively engaged in promoting the use of steel frames for residences. This was surprising in view of the fact that several other large companies had worked out plans for such construction, but had held them in abeyance. Today one of the subsidiaries of U. S. Steel is lending its support to the steel frame idea and several independent producers are definitely backing the movement. At present the prospect that producers of sheet steel, plates and perhaps other products will join the makers and constructors of structural steel in the steel house campaign is brighter than ever.

Several years ago when Lee H. Miller, chief engineer of the American Institute of Steel Construction, proposed the "battle deck" floor of steel plate, steelmakers were reticent in voicing their approval. Today the idea has gained headway to the extent that several hundred thousand tons of steel annually are being sold for steel floor construction. This development gradually is extending the markets for plain plates and floor plate.

Many other opportunities for steel await cultivation. One of the most important lies in the construction of suitable guard rails on highways and bridges. Many of the existing railings on bridges were put up before the day of high-speed automobiles, buses and trucks. Almost every day one or more lives are lost when vehicles crash through flimsy bridge rails. The death toll in the United States from this source alone easily exceeds 1000 annually. If every inadequate railing on bridges and on highways were replaced with safe barriers, the tonnage of steel required would be considerable. Here is a real opportunity for steel!

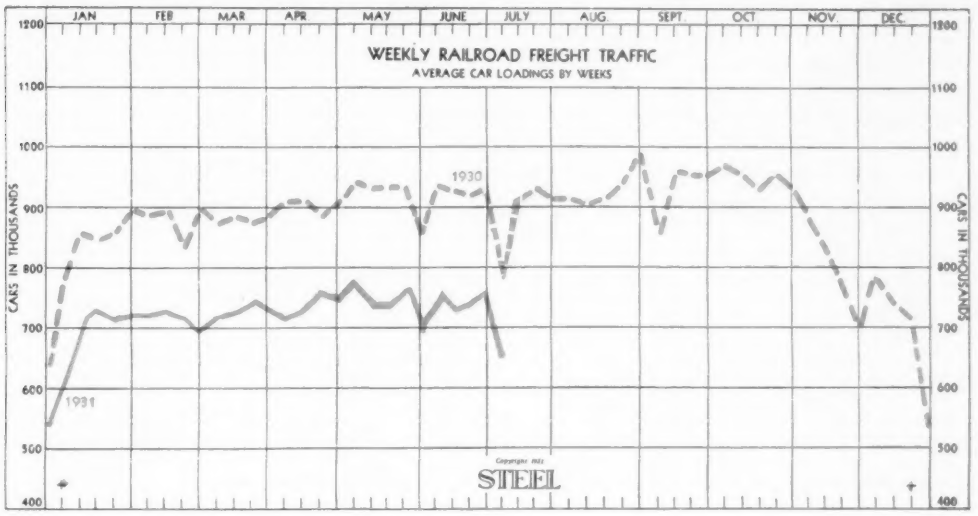
Wizard of Electricity Hints At "New And Unlimited" Market for Steel

The foregoing and many other opportunities for increasing the use of steel are ready for development. The area of these markets is fairly definite and can be determined by careful analysis. Beyond these tangibles lies the great field of unpredictable developments, any one of which might create a new outlet for steel as important as that furnished by the automobile industry.

Illustrative of these nebulous possibilities is the recent statement by Nikola Tesla, on the occasion of his seventy-fifth birthday: "I am working to develop a new source of power. . . . The conception, the idea when it first burst upon me was a tremendous shock. It . . . may prove . . . of great industrial value, particularly in creating a new and virtually unlimited market for steel."

Dr. Tesla's invention may or may not materialize, but other discoveries of the future will lead to many practical uses for steel—uses we cannot foresee. In the meantime the tangible markets await development, and it is gratifying that the American steel industry is exhibiting a greater interest in exhausting the possibilities near at hand.

THE BUSINESS TREND



1930	
July	4....792,053
June	27..936,690
June	20..920,645
June	13..926,066
June	6....935,647

1931	
July	4 667,879
June	27..759,290
June	20..739,116
June	13..732,453
June	6....760,890

Business Sentiment Is Shock-Proof

DURING the past week business sentiment withstood with remarkable courage the news of a threatened crisis in Germany's financial affairs and the drop of wheat prices to a new record low. Before many more days have passed it will face the ordeal of reviewing the reports of industrial earnings for the second quarter—reports which will present a sorry picture.

Fortunately much of the shock of adverse financial reports will be relieved by the fact that business has discounted the bad news in advance. Reports of earnings reflect conditions of the past. Today the eyes of business are on the future—particularly on the outlook for the fall.

At the moment industrial activity is at low ebb. Steel companies are struggling along at about 32 per cent of capacity. Building construction, usually slack at this season, is far below normal. Automobile production, buoyed up through three weeks of July by new models, now is beginning to yield to seasonal influences.

Brief Climb in Commodity Prices Ends; Trend Again Is Downward

The recent show of strength in commodity prices has subsided, and again the trend of weekly price barometers is downward. STEEL's composite of 14 steel and iron prices dropped 13 cents last week to $30.98.

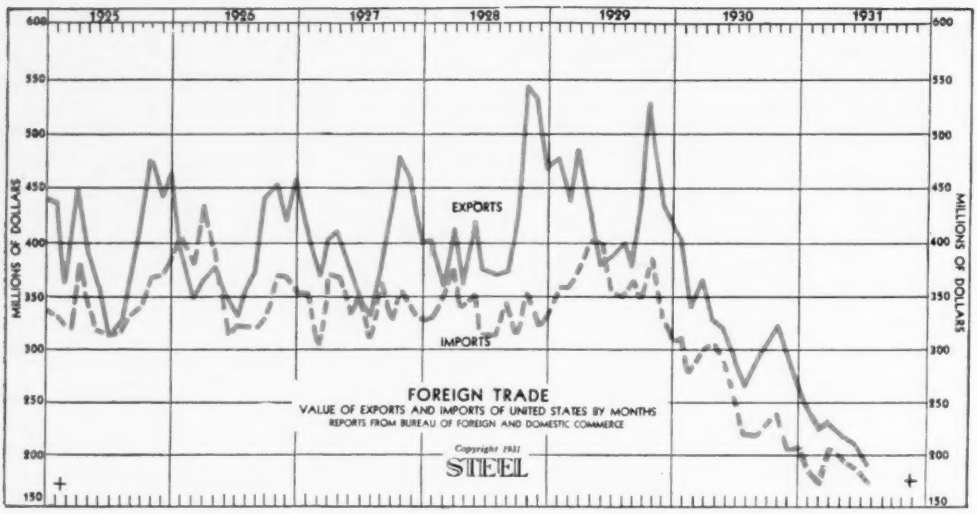
In this connection it is interesting to compare prices and production of today with those of the 1921 depression. The current composite, $30.98, is $1.88 below the lowest monthly average in the depression 10 years ago, which was $32.86 in February, 1922. The average for the first six months of 1921 was $45.86 and for the first half of 1931 it was $31.50. A glance at the accompanying table shows how precipitously prices dropped in 1921 as compared with the steady decline to lower levels in 1931.

Production was much lower in 1921 than now. The average daily ingot output for the first half of 1921 was 66,602 tons compared with 98,564 for 1931. The daily average for pig iron in the first six months of 1921 was 52,101 tons, while in the same period of 1931 it was 61,306 tons.

Will Turns in Production and Prices Follow 1921 Precedents?

The low point in production of steel ingots and pig iron in 1921 came in July, and it is possible that the turn may come in the same month this year. In the depression of 1921 the low point in prices came in February of 1922, but in view of the much lower level now obtaining, is it not likely the turning point will be advanced?

	Steel Ingots Average Daily Output		Pig Iron Average Daily Output		Steel and Iron Prices STEEL's Composite	
	1921	1931	1921	1931	1921	1931
Jan.	96,809	91,063	77,895	55,337	$51.98	$31.71
Feb.	83,279	104,265	68,906	61,114	48.81	31.65
Mar.	66,473	115,138	51,447	65,448	45.37	31.66
Apr.	53,342	104,711	39,691	66,986	43.84	31.59
May	55,622	96,365	39,202	64,355	43.32	31.37
June	44,090	79,843	35,466	54,599	41.87	31.02
July	36,713	.....	27,892	.....	38.14	.....
Aug.	48,156	.....	30,802	.....	35.99	.....
Sept.	51,619	.....	32,859	.....	35.34	.....
Oct.	71,044	.....	39,821	.....	35.46	.....
Nov.	72,942	.....	47,165	.....	34.71	.....
Dec.	62,707	.....	52,992	.....	33.99	.....
	1922	1932	1922	1932	1922	1932
Jan.	72,764	.....	53,090	.....	$33.25	.....
Feb.	86,324	.....	58,220	.....	32.86	.....
Mar.	104,247	.....	65,674	.....	32.97	.....
Apr.	116,090	.....	69,005	.....	34.42	.....
May	119,215	.....	74,495	.....	36.49	.....
June	120,299	.....	78,748	.....	36.96	.....



EXPORTS

June, 1931	$187,000,000
May, 1931	203,991,000
June, 1930	294,701,000

IMPORTS

June, 1931	$176,000,000
May, 1931	180,164,000
June, 1930	250,343,000

June Exports Are Down to New Low, Six-Month Total Is Off 36 Per Cent

Foreign trade of the United States in June reached another new low mark as exports dropped to the lowest point of the present decline. Imports suffered another small cut. Shipments out of the country were valued at $187,000,000, down 8.3 per cent from the total of $203,991,000 for May. Imports, valued at $176,000,000, were but slightly over the low point registered in February. Except for a comparatively small reaction in March, American exports have declined steadily since last October, when they reached $326,896,000. For six months, exports were $1,315,956,000, down 36.5 per cent from last year, and imports were $1,109,694,000, down 36.1 per cent.

Refined Copper Stocks Mount Again Although Output Hits New Low for 1931

Again in June, for the third successive month, stocks of refined copper accumulated, to reach at the end of the period a new high level of 413,474 tons. On the other hand, production was cut and shipments were raised, but production still was far above shipments. Total output for the month was 98,275 tons, being less than that of February, the previous low for the year to date. Shipments climbed back from 71,949 to 83,468 tons, but the gain was too small to make up even for the decline of May. A year ago production, at 124,821 tons, was starting a long downward trend interrupted by a slight gain in October before it was again stopped in March of this year.

Stocks

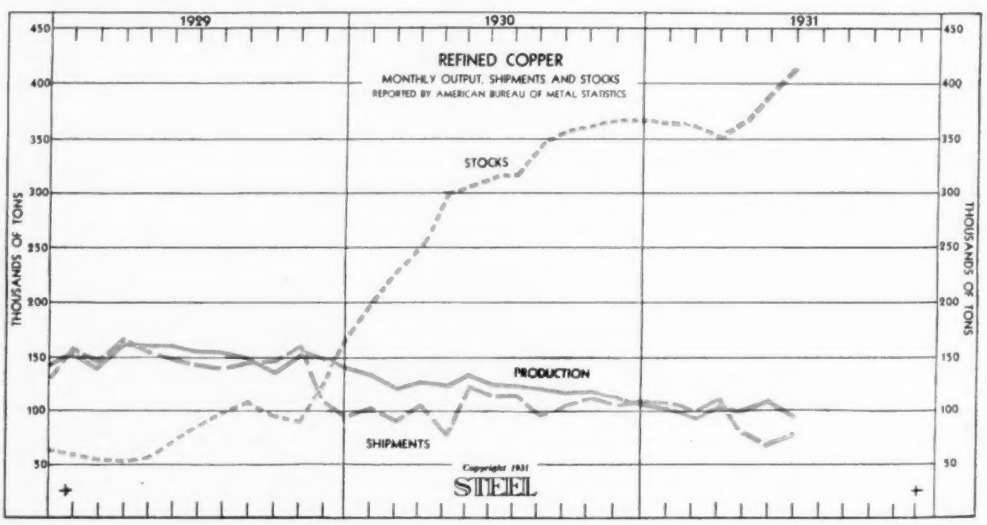
	Tons
June, 1931	413,474
May, 1931	398,667
June, 1930	316,762

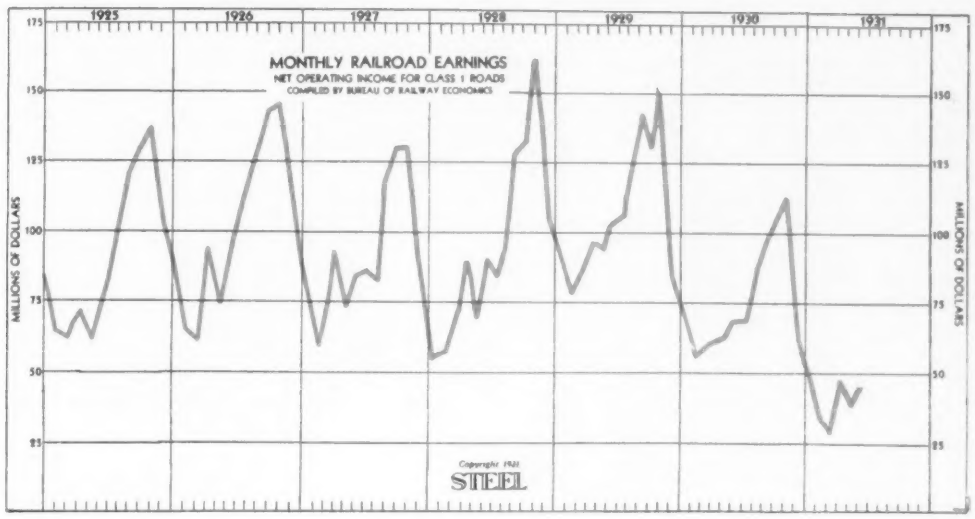
Production

June, 1931	98,275
May, 1931	102,695
June, 1930	124,821

Shipments

June, 1931	83,468
May, 1931	71,949
June, 1930	116,705





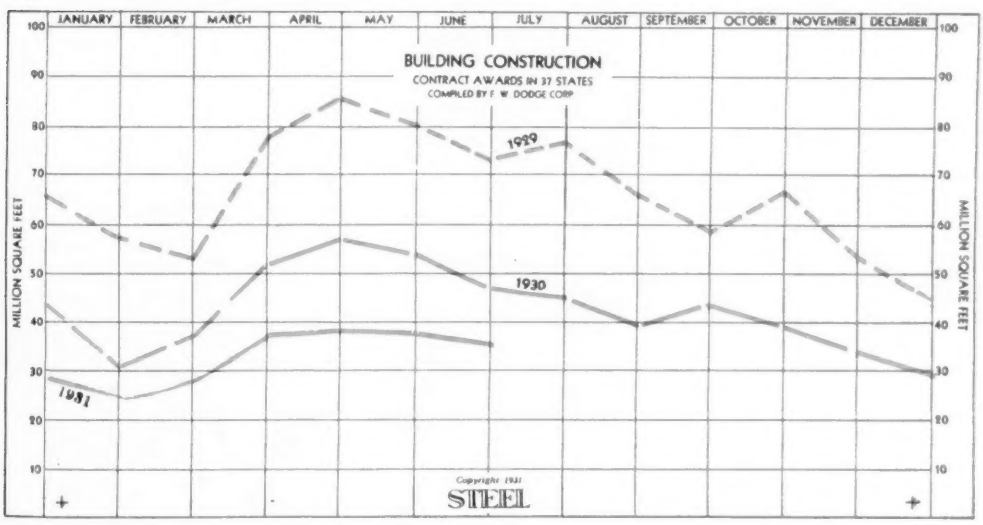
Million Dollars		
May	41.2	69.3
April	39.0	62.6
March	45.9	61.2
Feb.	27.2	59.4
Jan.	33.8	55.4

Railroad Income for May Turns Upward With Small Gain Over Previous Month

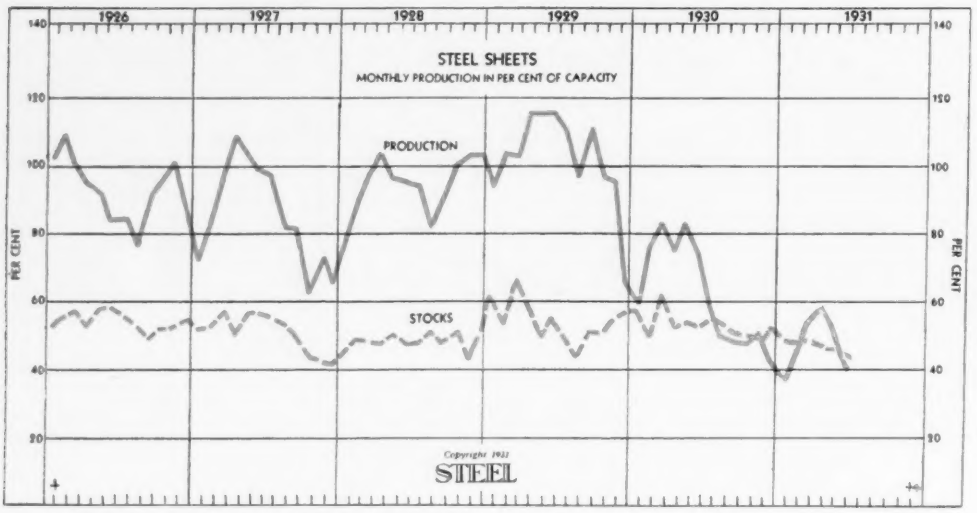
Railway earnings made a slight gain in May and replaced the April income as the second best of the year to date. Net operating income for May was $41,263,621, a gain of more than two million dollars over the previous month. In May, 1930, when the income was $69,322,585, the roads were receiving 3.48 per cent on their investment compared with the rate of 2.03 per cent for May of this year. The difficulty of cutting expenses to correspond with reduced revenues is shown by the fact that during May gross operating revenues dropped from $463,263,581 a year ago to $369,020,101, a fall of 20.3 per cent. Meanwhile, expenses were reduced from $351,942,282 to $288,067,333, a drop of only 18.1 per cent.

Building Awards Are Seasonally Lower, Industrial and Residential Projects Slump

With a seasonal recession, building contracts tapered off to 35,000,800 square feet in June, compared with a square footage of about 39 million in each of the two preceding months and awards for over 48 million square feet in June, 1930. Two years ago awards were for over 72 million square feet and three years ago, over 94 million square feet. June figures show an unusually sharp decline in industrial and residential construction. Residential building included 16,913,300 square feet, but slightly above the February rate, and industrial building dropped to 812,500 square feet, a low for the year to date and far under May's activity, at 2,574,000 square feet. A year ago industrial projects involved a square footage of 4,358,600.



Square Feet	
June, 1931	35,000,000
May, 1931	38,940,000
June, 1930	48,214,200



Production
Per cent of capacity

	1931	1930
June	40.3	58.8
May	56.6	73.3
April	58.2	84.0
March	61.1	73.7

Stocks
Per cent of capacity

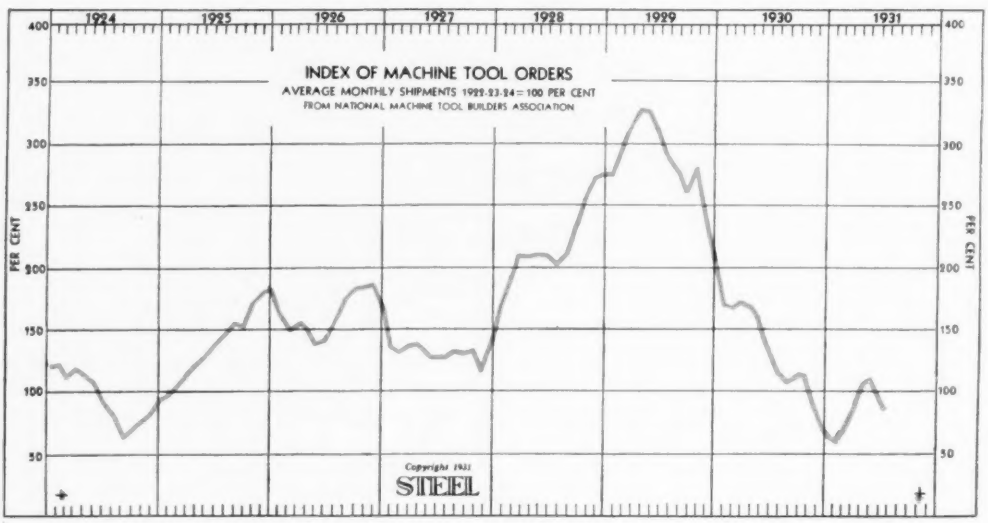
	1931	1930
June	45.8	57.3
May	47.5	54.7
April	48.1	56.6
March	51.7	54.6

Independent Sheet Steel Output Is Cut, Gradual Reduction Continues in Stocks

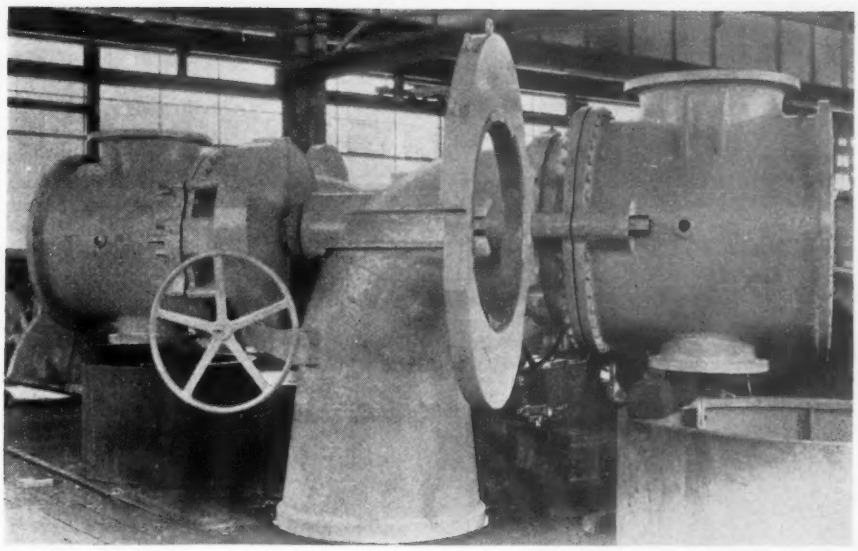
Production of steel sheets by independent producers took a precipitate drop in June, from 56.6 per cent of capacity to 40.3 per cent. Sales, which in May had suffered a similar decline, came back in June to record a slight increase, from 41.7 per cent to 44.5 per cent. Shipments followed the course taken by production and declined from 53.8 to 42.5 per cent. Due to a small margin between output and shipments, unfilled orders were down a fraction of a point. Total stocks continued their gradual recession, dropping in June to 45.8 per cent of capacity, or 168,013 tons, compared with 47.5 per cent in May and 54.1 per cent in February. A year ago stocks were at 57.3 per cent.

Machine Tool Index Turns Downward As June Buying Activity Slackens

Machine tool buying slackened again in June to bring the three months' moving average of orders to its first break since it turned upward early in the year. The moving average, which had gained a point in May, broke from 103.3 to 88.6. Of the three groups of companies reporting, the largest suffered a drop of nine per cent in orders, the middle range a decline of 39 per cent, and the smaller companies a loss of 16 per cent, compared with the previous month. Shipments dropped one point to 94.6, but the larger drop in buying cut unfilled orders to 2.24 times shipments. A year ago, when shipments were much higher at 176.4, unfilled orders were the smallest of the year, 1.60 times shipments.



	1931	1930
June	88.6	146.7
May	103.3	165.1
April	102.1	176.8
March	89.4	177.8
February	73.1	172.8
January	65.3	175.4

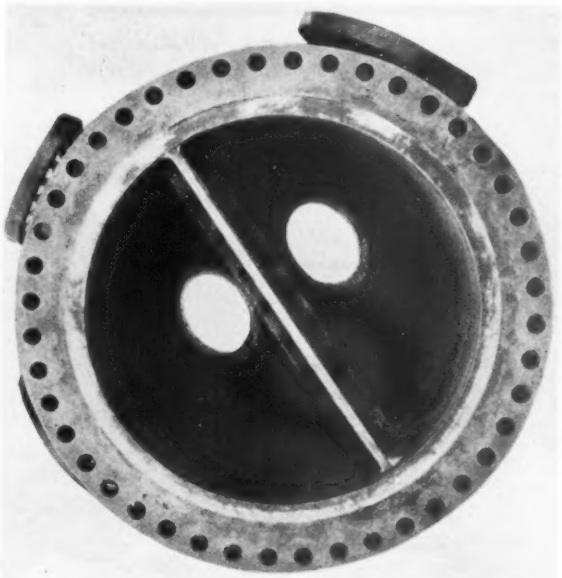


Courtesy Ohio Steel Foundry Co.

Fig. 1—A cast-steel spectacle valve for vapor phase oil refining operations. It handles hot oil vapor at a temperature of 900 degrees Fahr. and a pressure of 200 pounds per square inch

Steel Castings Meet Requirements of High-Pressure Service

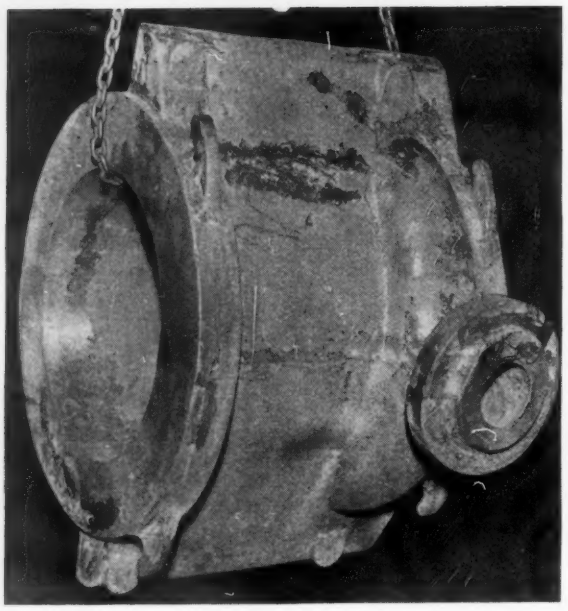
ENGINEERS and designers have long favored cast steel for use in power plants, oil refineries and other installations where high pressures and high temperatures are encountered in service. Good pressure castings must be practically free from internal defects of any sort and they must be made of dense, homogeneous metal. This means, of course, that careful metallurgical and molding practice must be followed in their production. Special heat treatment frequently is necessary to condition castings to meet service requirements; further, the castings usually must be readily machinable so that pressure-tight joints can be effected. All of these factors have been studied constantly by steel foundries specializing in this class of work. It is not surprising, therefore, that the industry should have advanced rapidly until today we find scientific control practiced in almost every production operation. This control is necessary to insure high quality, dependable steel castings for high temperature or high pressure work, or both.



Courtesy Ohio Steel Foundry Co.

Fig. 2—A desuperheater header of cast steel weighing 21,000 pounds. It successfully passed the test requirement of 1000 pounds per square inch hydrostatic pressure

One of the determinants influencing soundness, density and strength in castings is the deoxidation of the molten metal, but foundrymen have mastered the technique of producing steel in a quiescent state so that it is free from occluded gases. Molding practice has kept pace with other developments. Steel foundries have for years made frequent, sometimes daily, investigations to determine proper molding procedure. This is accomplished by dissecting sample castings by means of metal saws or by fracture under heavy drop hammers. More recently X-ray in-



Courtesy Keokuk Steel Casting Co.

Fig. 3—This large barrel pump casing cast from steel is typical of many castings which are subjected to exceptionally severe service conditions

spection has been utilized to study metal structures resulting from various methods of heading and gating. Thus, the principles of proper design and molding technique have been worked out until now the steel founder has at his disposal a vast accumulation of practical, scientific formulas to guide in the production of a satisfactory product.

It is stated often that castings can be only as good as the patterns from which they are made. Because of the foundryman's knowledge of the various factors involved in the production of good castings, it is wise to leave the construction of pattern equipment in his hands, and this applies particularly to pressure castings. As a matter of fact, about all the steel founder needs is a blueprint indicating important dimensions and a complete description of the use to which the casting will be put.

Knowing the service conditions to be met, the steel foundryman can determine the kind of metal to use, whether plain carbon or an alloy steel, and can determine proper wall thicknesses and other factors. Knowing the problem, steel founders frequently are enabled to suggest changes in design which have materially improved the finished job. Co-operation such as this is highly desirable.

Numerous Alloys Available

Research in steel castings production has made available a wide range of alloy steels and special heat treatments. Castings are made in steel of hundreds of different analyses, each of which possesses characteristics which fit it for use in meeting specific service conditions. In addition, a wide variety of heat treatments can be used to control the grain structure of the metal to give it maximum utility for the purpose for which it is intended. Metal analysis and heat treatment control brinell hardness, which is an important factor in the machinability of a casting.

TO meet the severe demands of high-pressure high-temperature applications, steel castings must have good quality and dependability. Foundrymen have met these specifications, first, by appraising service conditions and, second, by close control of metallurgical and molding practice in castings manufacture. How progress has been made in this field is recorded in the accompanying article.

Each new job coming to the steel foundry receives special study, often by a group of experienced engineers appointed for this work. The task is engineered so as to insure satisfactory performance.

Many pressure castings are used in the modern power generating plant and for these applications the high temperatures encountered make the problem a dual one. Steel which will successfully withstand high pressures does not necessarily stand up well at elevated temperatures. Steel castings of certain analyses, however, have been found to meet these conditions most successfully. Fig. 2 shows a cast-steel desuperheater header in use at the new generating plant of the Brooklyn Edison Co., Brooklyn, N. Y. It weighed 21,000 pounds and was machined and tested to 1000 pounds hydrostatic pressure. It is subjected to superheated steam temperatures.

Needs of Oil Refineries

Oil refineries also require castings to resist high-temperature high-pressure conditions. Fig. 1 illustrates a spectacle valve, used in vapor phase refining. The particular cast-steel valve assembly shown in the illustration now is in use on a refining unit of the Shell Petroleum Corp. This valve handles hot oil vapor at 900 degrees Fahr. and 200 pounds per square inch pressure.

Fig. 4 represents another typical casting employed in oil refining operations. It is a hot oil pump end casting used by the Union Steam Pump Co., Battle Creek, Mich., in pumps required to handle hot oil at pressures up to 1200 pounds per square inch and temperatures as high as 900 degrees Fahr.

Fig. 3 illustrates a large-size bar-

(*Concluded on Page* 71)

Fig. 4—Another typical steel casting for oil refining operations. It is a pump end casting handling hot oil at a temperature of 900 degrees Fahr. and pressure of 1200 pounds per square inch

Courtesy Ohio Steel Foundry Co.

Vanadium Has Marked Effect On Properties of Steel

SINCE early in the twentieth century when sufficient ore deposits were discovered to put vanadium on a commercial scale, this element has played an important part in the alloy steel industry. From the smallest high-speed cutting tool to the largest locomotive bed, it has proved itself a most valuable alloy in bringing out the superior qualities of the steel. Its many advantageous properties help the metal to lend itself to a large variety of applications.

Vanadium in steel has two important and dissimilar functions. It acts both as a scavenging agent to clean the molten bath and as an alloy in the finished metal. It performs the first action by uniting with undesirable oxygen and nitrogen in the molten condition in the bath and carrying them off in the slag. This cleansing produces a sounder metal and partly accounts for the excellent quality of vanadium steels.

Greatly Increases Strength

However, it is as an alloying material that this element exerts its greatest influence. The element combines with both the ferrite and the pearlite in the steel; increases the strength, hardness and resistance to abrasion and fatigue of the ferrite; and replaces the ferrite in the pearlite in increasing amounts, until with 5 per cent of vanadium present the entire amount of ferrite is replaced. The tendency of the elements to segregate during the cooling period is decreased. Consequently, cementite containing vanadium does not segregate into masses in the pearlite, but occurs in fine particles, causing more uniform distribution of the pearlitic constituents. As a result of this, the pearlitic structure tends to become sorbitic rather than lamellar, and lends itself more readily to spheroidizing annealing, which leads to greater machinability.

The presence of vanadium has a marked effect on the cooling and heat-treatment of the steel. It raises the Ac_1 and Ar_1 points slightly, but increasing amounts of vanadium raise the $Ac_{2 \text{ and } 3}$ and $Ar_{2 \text{ and } 3}$ points proportionately. It does not lower the critical points on cooling as the heating temperature is raised as does chromium.

Vanadium carbide is not as soluble as iron carbide. Therefore, in order to bring vanadium steels into the austenitic state and to prepare them properly for hardening, it is necessary to hold them longer at higher temperatures than it is for ordinary carbon steel. With 3 per cent vanadium, the steel is softened on quenching unless high temperatures (1300 degrees Cent.) are used.

Steels containing this element have greater thermal stability than those without. Their quenching range is widened, decreasing the dangers of overheating. These properties both tend to improve the quality of high-speed tool steels containing vanadium in amounts ranging from 0.50 to 2.50 per cent. It is claimed that the improvement is in direct proportion to the amount of the alloy present.

Regarding the physical properties of vanadium steels, in the normalized condition they show qualities equal to heat-treated ordinary steel of like carbon content. They thus present greater simplicity and low cost in treating. These steels also respond well to heat treatment.

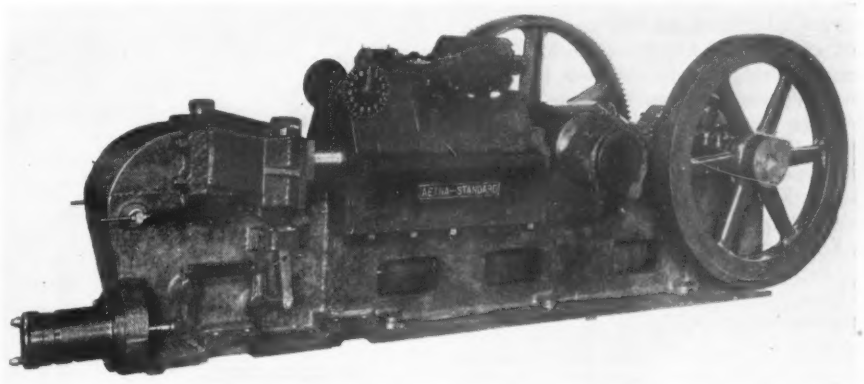
Next to carbon, vanadium has a greater effect than any other element when present in small proportions and greatly intensifies the effect of other elements present. Vanadium increases the tensile strength and elastic limit, particularly the latter. This increase is progressive until a vanadium content of 1.0 per cent is reached. Beyond this there is no increase and perhaps some loss in properties. Vanadium steels for engineering purposes seldom contain more than 0.15 to 0.25 per cent of the element. The increase in mechanical properties beyond this point does not warrant increase in cost except in the case of tool steels which contain up to 2.50 per cent vanadium. In this last instance, in addition to increasing the depth of hardening and the toughness of the metal, it imparts to it the ability to stand up under faster speeds and deeper cuts, and, at the same time, to retain a good cutting edge longer than the straight carbon steels. It frequently is used in tools for battering purposes because of its toughness coupled with hardness. The life and strength of springs is increased because of the fatigue-resisting properties of vanadium steel.

Reduces Chromium Hardness

When added to chromium steel, vanadium reduces the hardness of the chromium, with the result that chrome-vanadium steels are machinable as readily as ordinary carbon steel. Vanadium steels present no forging difficulties. They are no more delicate than a straight-carbon steel and require no special care during forging.

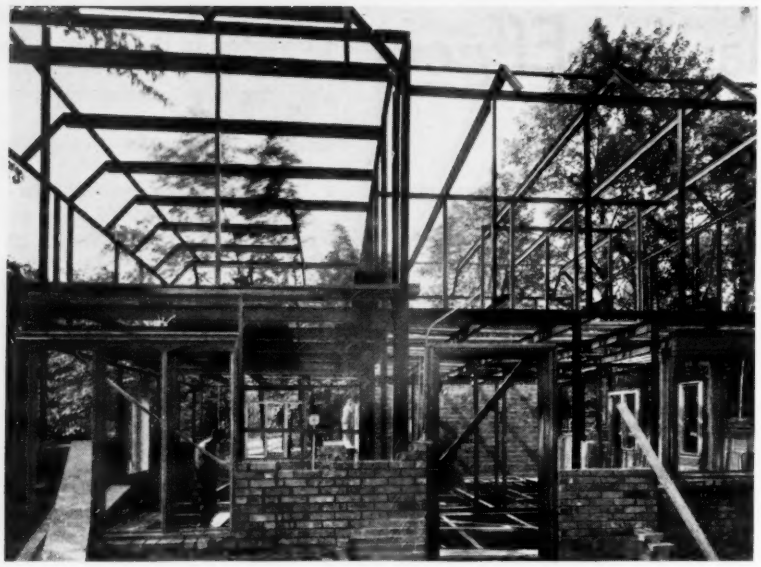
Vanadium, in amounts varying from 0.12 to 0.20 per cent, is used to a large extent in the manufacture of steel castings for severe duty. These castings are frequently of the carbon-vanadium or nickel-vanadium type. There is an increasing demand for the latter which is made up of 1.5 per cent nickel and 0.12 to 0.16 per cent vanadium. These percentages in the annealed condition raise the tensile strength 10 to 15 per cent and the elastic limit 20 to 30 per cent, without any loss in ductility. Vanadium castings should be annealed at higher temperatures than ordinary steel. A temperature of 1600 degrees Fahr. is usually satisfactory; but the cooling from this temperature must be slow because of the hardening properties of vanadium. This element is also of great value in heat-treated castings.

The foregoing brief outline of the effects of vanadium on steel, compiled by the Electro Metallurgical Sales Corp., New York, tends to show how vanadium imparts to steel the superior physical properties for which it is so well known.



STRAIGHTENING MACHINE HAS MOTOR-DRIVEN RAM ADJUSTMENT

A new type bar straightening machine with a motor-driven ram adjustment recently was built by the Aetna-Standard Engineering Co., Youngstown, O. Round or square billets, 3 to 12 inches, are delivered to the machine, shown above, either by tables or by hand. Turning the stock in the unit is accomplished by an air-operated roller lifting device. The ram adjusting mechanism is driven by a small motor, connected to the adjusting nut by gears and a flexible coupling. The anvils are of cast steel and are adjustable to various centering distances ranging from 20 to 60 inches.



The steel framework for this house was welded together by the electric arc. Masonry walls were started as soon as the steel work of the first and second floors was completed

Welding Facilitates Building Of Steel Frame Residence

STANDARD steel shapes, delivered on the job like lumber and joined together by electric arc welding, form the framing for a new residence in the exclusive Shaker Heights district of Cleveland. Because this framing costs little more than wood construction, potential market for almost 3,000,000 tons of steel is suggested by this type of home.

Practical Design, Low Cost

A few builders have experimented with steel house construction and some attempts to make use of the efficiencies of arc welding have been noted, but this is claimed to be the first house construction of practical design and low cost. Bids received by the designer and architect, George H. Burrows, Cleveland, for both wood and steel construction varied in but six items. These were as follows.

	Wood framing	Steel framing
Structural steel (erected)	$ 180.00	$ 881.50
Rough lumber	1185.00	432.00
Carpenter labor	1400.00	1000.00
Plastering	800.00	615.00
Wiring	335.00	420.00
Masonry	2820.00	3395.50
Total	$6720.00	$6744.00

The difference in favor of wood framing was therefore $24, negligible in the face of the advantages of welded steel construction giving a stronger, stiffer structure which will not shrink, warp or sag.

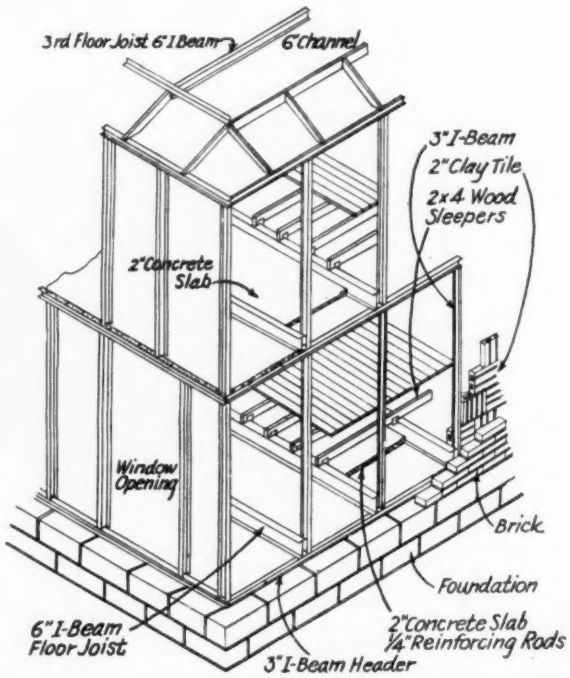
In constructing this house, 20,296 pounds of steel were used. In 1930 about 110,000 homes were erected in this country, that figure being less than half of normal residence building. Assuming that 300,000 homes are constructed in a normal year and a requirement of 10 tons of steel per home, the potential market would be 3,000,000 tons of steel annually. The adoption of steel plate in battledeck flooring would increase this potential tonnage considerably. According to Lee H. Miller, chief engineer, American Institute of Steel Construction, Cleveland, the steel house represents the country's largest potential market for structural steel. (STEEL, July 3, 1930, p.54.)

While the Cleveland house erected by arc welding was somewhat of an experiment, no difficulty was met in the construction. The steel, cut to lengths at the mill, was delivered on the job and erected by two steel workers and a welding operator in less than five days. All fabrication was done on the site of construction.

Inspection Carried Out

The steel for this house was erected by the McKay Building Co., Cleveland, with the welds made under the supervision of the Lincoln Electric Co., also of Cleveland, which supplied the welding equipment and electrodes. Louis K. Whitcomb, structural engineer for the Carnegie Steel Co. checked the design and inspected the steel erection.

The economy of this steel house is made possible, first by arc welding reducing cost of material and fabrication as well as increasing the speed of erection, and second, by several unique features of construction. The first floor sills are 3-inch 5.7-pound Carnegie I-beams, resting on masonry foundation walls. The floor joists for the first and second floors are 6-inch 12.5-pound Carnegie I-beams which are placed across the sills on 4-foot centers. For studs, 3-inch



Isometric sketch of steel residence which in addition to details of the framework shows type of masonry wall, concrete ceiling and wood floor construction

4.1-pound Carnegie channels are used.

Complicated welding was avoided. The floor joists are fixed to the sills by 1 inch of tack weld where each flange contacts the sill. The channels which serve as studs and partitions are fused into the sill by welds along the web and contacting leg of the channel.

The masonry is tied into the steel framework by clips which are wedged on the flanges of the studs and secured in the mortar of the masonry. The brick veneer construction requires only an inside and outside skin of masonry. A 4-inch brick wall forms the exterior and 2-inch hollow tile the interior. A 3-inch insulating air space, the depth of the channels, surrounds the studs.

Ceilings are poured concrete, 2 inches thick and reinforced by pencil rods spanning 4-foot distances between the floor joists. Not only will this concrete offer a surface for plastering but it will serve to increase the fire-resisting qualities of the building. The floor construction, 2 x 4's laid across the steel joists to support the subfloor, allows piping and wiring in any direction without cutting the steel frame, yet the depth of this floor construction is no greater than with wood joists.

A close-up view showing floor joists spliced by butt welds and tack welded to the header of the wall partition below

New Tools of Tantalum Carbide Show Remarkable Cutting Properties

TANTALUM carbide cutting tools, recently placed on the market by certain producers, are expected to have as revolutionary an effect on the cutting of steel and its alloys as the development of tungsten carbide several years ago in the cutting of nonferrous metals and cast iron.

In cutting ordinary steel, tantalum carbide can be used at speeds substantially four times as great as the average of 60 feet per minute with high-speed steel and in addition, tools of this new alloy have from 20 to 30 times the life between grinds, as compared with high-speed steel. Of greater importance, however, is the fact that tantalum carbide cuts easily the toughest steel.

Tests Reveal Capacity

Tools made from tantalum carbide recently were subjected to a test to determine their capacity in turning tough steels and alloy steels, including nitralloy, chrome-nickel alloy and case hardened steel. With a cutting depth of ⅛-inch and a feed of 0.016-inch, they turned 3-inch rounds at a speed of 460 revolutions per minute and in each case after cutting the length of the round, 6 feet, the tantalum carbide tool was said to be undamaged. Attempts to increase the depth of the cut stalled the machine. Up to the present, the limit of these cutting tools has been the limit in the power of the turning equipment. Tests of high-speed steel tools with these same rounds showed that the high-speed steel cutting point began to deteriorate when 2½ to 2¾ inches across the face of the round had been cut.

At the Ludlum Steel Co. plant at Watervliet, N. Y., it was recently necessary to cut a groove in a special hard cast-iron guide for a rolling mill. This die was so hard that the ordinary grinding wheels would not grind it and high speed steel tools would not even mark it. With a tantalum carbide tool mounted in a shaper, however, a groove ⅜-inch deep with an angle of 135 degrees was cut the entire length of the guide, after which the entire surface was faced off.

The ore for making tantalum carbide is obtained from Australia and the first step in this country is to convert it into tantalum oxide, which, after purification, is converted into tantalum carbide. This tantalum carbide, which is a finer powder, is mixed with a binder of cobalt and some tungsten and is then shaped and given a preliminary sinter in order to set the material so that it can be handled.

It is then cut to shape with hand tools, milling cutters, etc., and after receiving its final shape, gets a finishing sinter at a temperature of 2600 to 2800 degrees Fahr., in an atmosphere of hydrogen. The tantalum carbide tools are practically pure tantalum in view of the fact that only small quantities of cobalt and tungsten are employed. After finishing, the tips are welded upon tool steel shanks, the same as tungsten carbide cutting tools.

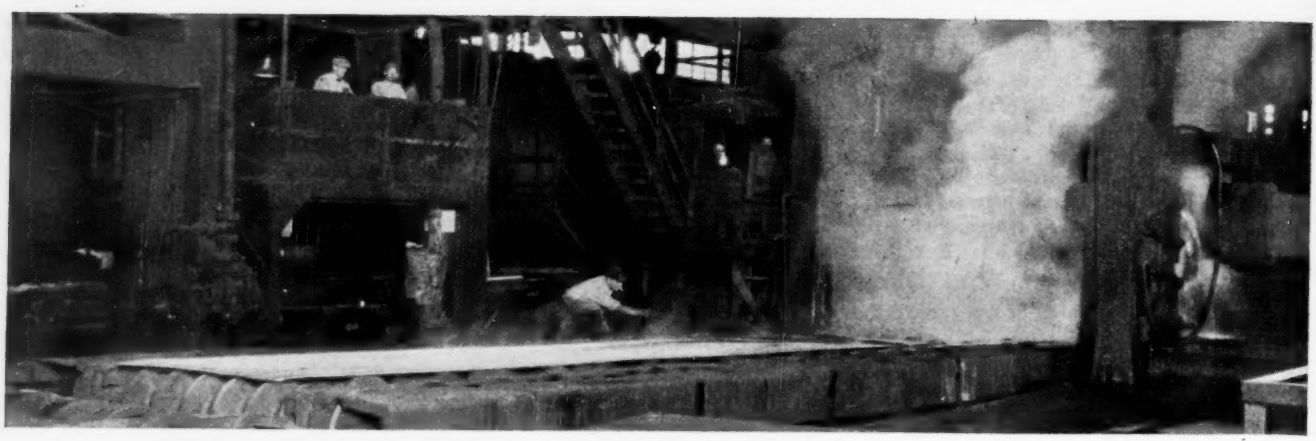
A feature of tantalum carbide is that it is ground more easily than tungsten carbide and almost as easily as high-speed steel. Tantalum carbide can be ground with ordinary soft grinding wheels. Another interesting feature of tantalum carbide is that it does not get hot while cutting. Apparently, all of the heat goes into the chips which are removed from the work.

The Carboloy Corp., New York, Firth-Sterling Steel Co., McKeesport, Pa., and Ludlum Steel Co., Watervliet, N. Y., are manufacturers of tantalum carbide cutting tools. These interests altogether have made some 500 of these tools which have been subjected to diversified applications in the cutting of steel and special steels and such alloys as 18-8 chrome-nickel steel.

Not Yet Applied to Saw Teeth

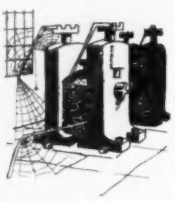
So far the experience on drills is limited and the application of tantalum carbide to saw teeth also has not yet been developed. Incidentally, the price of tantalum carbide is the same as the price of tungsten carbide. Thomas Prosser & Son, 15 Gold street, New York, American representatives for the Krupp interests, Germany, have the privilege of importing tantalum carbide cutting tools into this country.

A peculiar feature of tantalum carbide, as compared to tungsten carbide, is that the two appear to supplement each other. Where tungsten carbide is admirable for cutting nonferrous metals and cast iron, but not so satisfactory on steel and steel alloys, tantalum carbide gives its best cutting performance on steel. On the other hand, tungsten carbide is proving constantly more satisfactory for use in dies for drawing steel wire, whereas the experience to date is that tantalum carbide is an ideal material for dies for drawing nonferrous metal wire.



PROGRESS IN STEELMAKING

TANTALUM carbide cutting tools, recently developed, appear to have promise of wide usefulness machining tough steels. Recently a certain steelmaker in New York state was confronted with the necessity of cutting a groove in a rolling mill guide made of a special hard cast iron. The guide was so hard that ordinary grinding wheels would not grind it and high-speed tool steel would not even leave a mark. With a tantalum carbide tool mounted in a shaper, a groove ⅜-inch deep, with an angle of 135 degrees, was cut the entire length of the guide, after which the guide was entirely refaced with the same tool.



ANYBODY who has had experience in explaining why his plant is operating in the red," says an important steel mill executive, "is apt to lose all fear of fighting the management for money with which to keep up to date."

Much has been said about the steel industry's willingness to scrap obsolete equipment and invest enormous sums in keeping up to date. This is true in a measure. Recently a steel company bought a brand new mill, which was delivered but never set up. It was scrapped because something new was decided upon. There have been several instances where rolling mills and other equipment bought a few years ago have been thrown out, lock, stock and barrel.

To be absolutely truthful, these cases are not altogether the rule. More than one steel company today has a large inventory of useless equipment. Idle plants and idle equipment are getting more obsolete by the minute. One case comes to mind where a steel company has an inventory of idle equipment of a certain kind approximating $1,000,000 on the books. It is estimated that this equipment could be liquidated at the present time for several hundred thousand dollars, which is a good deal more than can be realized if the liquidation is postponed indefinitely. In the meantime, the company owning this equipment is under considerable expense in carrying it.

♦ ♦ ♦

A steel plant in the Pittsburgh district recently made a change in locker and lavatory facilities for its employes. Formerly it had a building devoted specially to this purpose, but it was found that too much time had to be spent by the workmen in walking from the different parts of the mill to this building and back again. These centralized facilities were discontinued, and, instead, small locker and toilet rooms are scattered around the plant, located conveniently to the places where the men work.

A New Slant on "Repairs"

ORDERS are orders. One of the steel company managements is not honoring any requisitions for new office furniture, although permitting old furniture to be repaired. A superintendent had two chairs, one for himself and one for visitors. When more than one visitor called, he would have them sitting on his desk, on window sills, leaning against walls, etc. Not long ago his "company" chair broke. The superintendent thereupon displayed his resourcefulness. He sent one of the legs to the pattern shop with instructions that it be "repaired." Later he sent the other three legs to the pattern shop for repairs. He now has four fine chairs, made of mahogany and put together in such a way that they are expected to last a long, long time. It is figured that each of the chairs cost at least twice as much as if it had been purchased at a furniture store. The idea now is being applied in other ways. Instead of getting along with wornout wheelbarrows, for instance, a handle is sent to the blacksmith shop for repairs, and the result is a fine wheelbarrow, all new excepting the old handle, and of course the latter easily can be "repaired" at any convenient time.

AS STEEL plant men ascend the ladder of promotion and suddenly emerge into the rarefied atmosphere surrounding the leaders of the industry, they encounter several new kinds of pitfalls. One of them is the effort by professional publicity men to exploit them. They tell the newly arrived celebrity that he is a big man and worthy of a ranking among the country's great men. His sketch and photograph are published and then the bills start to roll in. Incidentally, with the real topnotcher in the steel industry, rarely a month goes by without an attempt on the part of some writer to get a commission to write his biography.

♦ ♦ ♦

Sintering of iron ore, for some years has been accepted practice in the east. Eastern magnetic ores are easily concentrated and converted into sinter. At least two furnaces, one in the East and one in the Pittsburgh district, are operating on 100 per cent sinter obtained from mixtures of flue dust and magnetic concentrates.

In the past year or so sintering of iron ore has gained ground in the

Middle West, but only to the extent of utilizing the surplus carbon inherent in flue dust. By adding one to two parts of ore to one part of flue dust, middle western furnaces now are getting two to three times as much sinter as previously. As a result 15 to 20 per cent of their burden on the average is sinter.

Although the nonmagnetic lake ores cannot be concentrated cheaply like the magnetic eastern ores, this fact does not seem to have any bearing on the value of sinter. In some quarters it is felt that ideal practice with lake ores would be the use of sintered fines in mixture with coarse ore. If the lake ore consuming furnaces have the same experience as the eastern furnaces, namely, that increased use of sinter automatically results in more efficient blast furnace performance, it seems likely that sintering of lake ores will broaden.

A dustless sintering machine in this country now is being built at the Lebanon, Pa., plant of the Bethlehem Steel Co. and is expected to be operating in August. It will augment existing equipment for sintering magnetic concentrates from the famous Cornwall mine.

♦ ♦ ♦

An eastern steel company has obtained remarkable results from a specialized waging system which it installed early this year throughout its entire works. One gratifying feature of this system is that it is popular among the men whose compensation thus is measured. This system is said to be absolutely self-policing.

♦ ♦ ♦

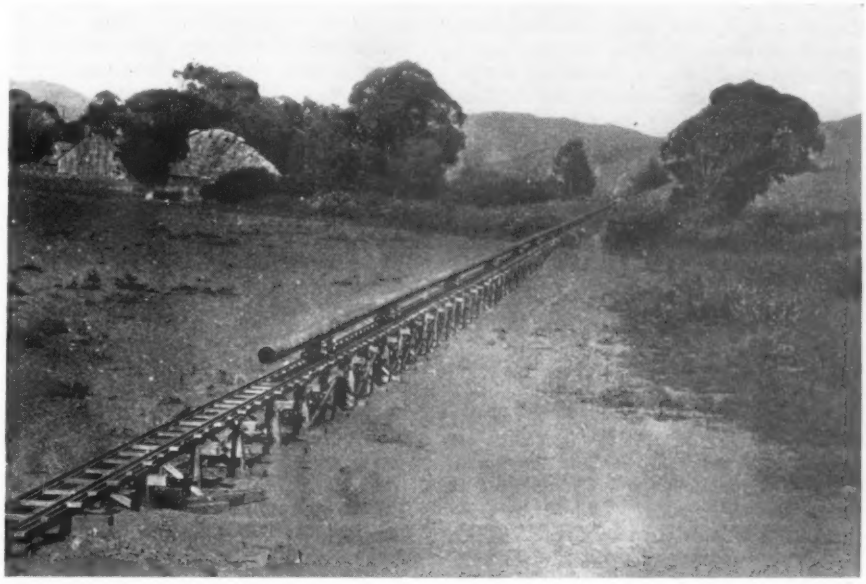
A self-contained steel plant recently began burning 100 per cent blast furnace gas in a large car-type forging furnace which previously had burned coke oven gas. The furnace was equipped with Isley control which permitted a more efficient arrangement of the checkers in the old checker chambers but otherwise no changes were made. Resulting lower costs have led to a second similar installation. Use of 100 per cent blast furnace gas as fuel now is being applied with Isley control to forging and heating furnaces, soaking pits and heat treatment furnaces.

Submarine Oil Line Built on Shore, Launched from Special Trestle

NATURAL hazards complicated the construction of a 70-mile pipe line recently completed by the Standard Oil Co. of California, and required the adoption of unique construction methods in order that the line could fill its intended duties. This line, which carries oil from the Kettleman hills to Estero Bay on the Pacific coast, is of 10-inch pipe, is completely welded, and carries oil under an initial pressure of 1000 pounds per square inch to storage tanks on the coast, no booster stations being used.

Since a deep water harbor is not available at this point, a 16-inch submarine pipe line has been constructed to carry the oil from the storage tanks on shore out to the tanker anchorage 3000 feet at sea. At this point the oil is loaded for transport to the refineries by means of a hose attached to the seaward end of the pipe and connected to a buoy by a chain. This submarine line, to assure freedom from leaks, was welded completely by the oxyacetylene process, the standard open vee butt weld being used without straps or any reinforcements.

One of the most interesting features of this line is that it was entirely constructed on shore, a narrow-gage railroad extending 3000 feet inland in a straight line on a 2 per cent grade, having been constructed especially for the purpose. All welding was done at the inland end of the track, and as fast as lengths of pipe were added to the line at this point it was moved forward toward the shore on trucks running on the narrow-gage tracks. The accompanying illustration shows the completed portion of the line on its way toward the sea. When completed the end of the line was capped, equipped with a sled and towing bridle and pulled out to sea by means of a tug. A hydrostatic test showed that the welded line had withstood the launching operation perfectly and was ready for service.



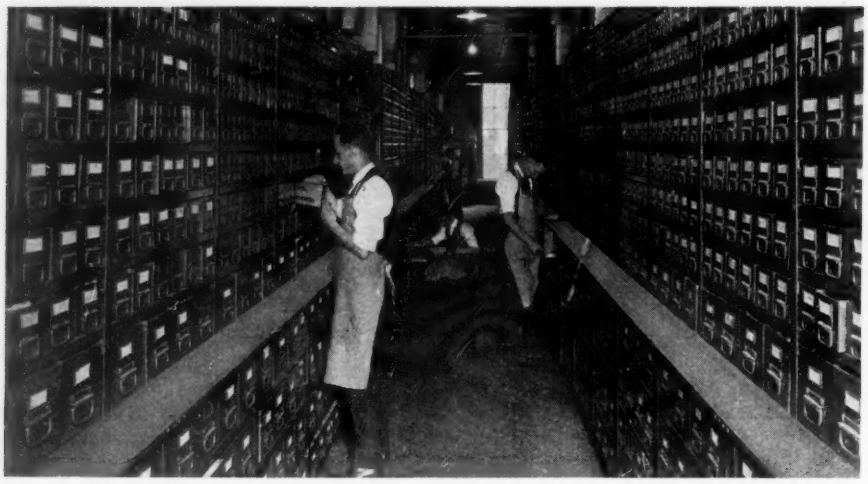
This 16-inch submarine oil line, completely welded, was launched from a narrow-gage track, extending over half a mile inland from the sea, and built on a 2 per cent grade

Executives Will Visit 14 Research Laboratories

Several executives of the steel industry will be invited to be members of a party 100 business men and bankers who will tour several research laboratories in October under sponsorship of the National Research council, New York.

Purpose of the tour will be to acquaint the group with scientific research activities now carried on by all classes of industry, large and small, in a period of changing economic conditions, looking to such factors in business readjustment as creation of new products and development of new markets. The tour, being arranged by Maurice Holland, director of the council's division of engineering and research, will be similar to one conducted last October when nine laboratories were visited.

Among the 14 plants to be visited between Oct. 6 and Oct. 14 are: Arthur D. Little Inc. and Dewey & Almy Chemical Co., Cambridge, Mass.; Eastman Kodak Co., Rochester, N. Y.; Ford Motor Co., Dearborn, Mich.; Nela Park laboratories of General Electric Co., Cleveland; Goodyear-Zeppelin Corp., Akron, O.; Battelle Memorial institute, Columbus, O.; and Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.



Photo, Courtesy Lyon Metal Products

Thousands of steel boxes are used to store small parts in the plant of the Radio Corp. of America, New York

Large Uses of Steel in Small Ways

196th Article ◆ Shelf Boxes

A LARGE amount of sheet steel is consumed in the manufacture of shelf boxes used in many manufacturing plants, service stations, warehouses and stores, for holding small parts such as screws, bolts, nuts; radio and automobile parts; plumbing and steamfitting supplies; fittings for electrical equipment, and watch crystals.

In comparison with wood boxes of equal outside dimensions, the saving of space by the use of steel ranges from 15 to 25 per cent; the steel boxes are lighter, more secure, fireproof, and far outlast wood. As a consequence, steel is replacing wood, and an industry has sprung up for the manufacture of steel boxes. One of the leading producers estimates that approximately 1200 tons of steel is used annually in their manufacture. This does not include shop or tote boxes used for transporting material about a plant, or shelving for boxes.

Various Sizes Made

Shelf boxes generally are made of 18, 20 and 22-gage steel, with a few of the larger sizes of 16-gage. Every manufacturer has his own dimensional specifications, but popular sizes range from 5½ to 12 inches in width, 10½ to 13½ inches in height, and 12 to 24 inches in depth.

Ingenious methods have been developed for the manufacture of the boxes. Some of the smaller sizes are made of one piece, cut and folded, and reinforced with a ½-inch lap around the top. Larger sizes are fabricated from three pieces; one piece forming the two sides and bottom, and the other two pieces the ends. The various operations are handled by straight-line production methods on a row of forming presses.

Several Types of Handles

Several styles of handles have been developed. Drop handles are held in position by means of a strip of steel riveted or welded to the box. A T-handle combining strength and stiffness is attached to the box by inserting the upper edge under the hem at the top of the box, and riveting or welding it below. Another type of handle is made simply by using a piece of steel for the front of the box slightly higher than the overall height of the box, bending it outward and then inward, flush with the top of the box. All styles combine two important elements: Simplicity of design and rugged construction. Label holders are attached to the front of the boxes by riveting or welding.

Adjustable compartment boxes are made by punching vertical slots along each side. In the punching of these slots two edges are forced inward, forming the groove into which the steel dividers slide. The top edges of the dividers are turned over, giving them a safe edge, and strengthening them. For special purposes where boxes are not to be used at all times in shelving, they are slightly tapered. Also, some types have two steel runners riveted to the bottom, which facilitate easy removal from a stack.

Officers for Automotive Engineers Nominated

Arthur J. Scaife, consulting field engineer, White Motor Car Co., Cleveland, has been nominated for president of the Society of Automotive Engineers for 1932.

Eight vice president nominees and the divisions which they will represent are as follows: Aircraft engineering, W. B. Stout, Stout Engineering Laboratories, Dearborn, Mich., and C. L. Lawrence, president, Lawrence Engineering and Research Corp., New York; diesel engine engineering, A. J. Poole, United American Bosch Corp., New York; motor truck and motor coach engineering, B. B. Bachman, Auto-Car Co., Ardmore, Pa.; passenger car engineering, D. C. Ross, chief engineer, Studebaker Engineering Corp., South Bend, Ind.; passenger car body engineering, A. J. Neerken, Hupp Motor Car Corp., Detroit; transportation and maintenance engineering, A. S. McArthur, general superintendent, Toronto Transportation commission, Toronto, Ont.; and production engineering, J. E. Padgett, Spicer Mfg. Co., Toledo, O.

Three new counsellors nominated were: H. T. Woolson, chief engineer, Chrysler Corp., Detroit; R. E. Wilson, Standard Oil Co. of Indiana, Chicago; and S. O. White, chief engineer, Warner Gear Co., Muncie, Ind.

John A. C. Warner, 29 West Thirty-ninth street, New York, is secretary and general manager of the society.

Seek Uniform Markings on Valves and Fittings

The National Association of Purchasing Agents is establishing a committee to develop uniforms markings on valves and fittings and to promote their general adoption by manufacturers. E. H. Weaver, district purchasing agent, Union Oil Co. of California, Seattle, is chairman.

Difficulties arise from confusion as to pressures; some valves show safe working pressures, others test pressures. Still others show steam pressures and others apply to oil, water and gas. In some cases casting numbers are shown.

In connection with the standardization work, several organizations have been invited to co-operate, including the American Petroleum institute, National Electric Light association, American Standards association, American Railway association and others whose members are directly concerned with the problem.

New Books Worth Reading

SCIENCE ◆ ECONOMICS ◆ BUSINESS

Uses of Steel which Add Mites to Great Tonnage

Large Uses of Steel in Small Ways, Volume II; cloth, 80 pages, 8½ x 11 inches; published by Penton Publishing Co., Cleveland, and supplied by STEEL, Cleveland, for $2.50, plus 15 cents postage; in Europe by Penton Publishing Co. Ltd., Caxton House, London, for 12s 6d, postage extra.

The success of the first volume of this series, containing 51 articles reprinted from *Iron Trade Review*, each describing some use of steel accounting for a tonnage, caused a second compilation. The present volume presents 93 articles from *Iron Trade Review* and its successor STEEL.

Since November, 1923, these two publications have been presenting at regular intervals this series of articles on the varied uses of steel, often small and obscure, but each presenting its contribution to the total tonnage annually demanded from producers. Success of the series has caused requests for reprinting in more accessible form than the magazine files and these volumes are designed to meet this demand.

Not only are the articles informative as to the quantities of steel used and methods of manufacture of the various products, but illustrations add verve and interest to the text.

◆

South Tells Story of Its Business Development

Blue Book of Southern Progress, 1931; paper, 228 pages, 6 x 9 inches; published by the *Manufacturers Record*, Baltimore; supplied by STEEL, Cleveland, for 50 cents, plus 15 cents postage; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London, Eng., for 2s 6d, postage extra.

A statistical and descriptive presentation of the progress of the Southern states, issued annually, this is the chief spokesman of the South in telling its story of diversification and development to the world. It covers all aspects of business and in speaking of the iron and steel industry attention is called to large investments in additional equipment. It is stated the Gulf States Steel Co. in the past year expended $20,000,000 in new units at Alabama City and Gadsden, Ala., and $8,000,000 program started by the Tennessee Coal, Iron & Railroad Co. in the Birmingham district and $10,000,000 in improvements by the Weirton Steel Co., Weirton, W. Va.

The volume is filled with statistics, illustrations of new industries and business structures and discussion of changes and improvements in methods.

◆

Use of the Spectrum in Study of Mineralogy

Spectrum Analysis in Mineralogy, by A. A. Fitch; paper, 52 pages, 6 x 9½ inches; published by Adam Hilger Ltd., 24 Rochester place, Camden road, London, N. W. 1, Eng.; and supplied by STEEL, Cleveland, for 50 cents, plus 15 cents postage; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London, for 1s 9d net or 1s 11d, postpaid.

This booklet is intended as an introduction to the technique of the application of spectrum analysis as an accessory means of identification of mineral species and for investigation into their chemical composition, as well as a summary of the results the methods have yielded.

Chapters cover the technique of spectrum analysis, qualitative and quantitative analysis of minerals and mineral concentrates, analysis of rocks, meteorites, natural waters, X-ray spectrum analysis of minerals, identification of minerals by absorption spectra and examples of analyses of minerals by spectrum analysis.

A bibliography covering nearly 100 articles and publications bearing on these subjects is appended.

◆

Tabloid History of Steel Is Guide to Its Growth

Chronology of Iron and Steel, second edition; cloth, 332 pages, 4 x 6¾ inches; published by Penton Publishing Co., Cleveland; supplied by STEEL, Cleveland, for $4, plus 15 cents postage; in Europe by Penton Publishing Co. Ltd., Caxton House, London, for 20s 6d, postpaid.

Since iron and steel play so important a part in the life of the world, their history from prehistoric times to the present is of great interest. In this volume, which may be slipped into the pocket, is compressed the leading facts of the development of this industry, chronologically arranged, presenting in accessible form the salient facts of the progress in knowledge and its application in a practical way to civilization's needs.

The original compilation was made by Stephen L. Goodale, professor of metallurgy at the University of Pittsburgh, and was edited by J. Ramsey Speer of the Massachusetts Institute of Technology. The second edition has been brought down to date by the Penton Publishing Co., taking the compilation through the first quarter of 1931.

The arrangement is chronological, from prehistoric eras through ancient, medieval and modern times, to the present. Thus is given a connected resume of developments from the days of Tubal Cain, indicating the gradual broadening of knowledge through the efforts of successive minds. An inclusive index makes possible immediate dating of any event.

This book forms a key volume in any library of iron and steel literature and is almost indispensable for the student or the general reader in this field.

◆

What the United States Owns in Mineral Wealth

Mineral Resources of the United States, 1928, Part I, metals, Part II, nonmetals; cloth, 910 and 801 pages, 6 x 9 inches; published by the United States government printing office, Washington; supplied by STEEL, Cleveland, for $1.50 and $1.25, respectively, plus 15 cents each for postage; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London, for 7s 6d and 6s 6d, postage extra.

This annual report by the bureau of mines, department of commerce, is the forty-sixth of the series. In Part I is given a general summary of all mineral products and 31 chapters, of which 15 are state or regional reports, 16 are general reports on various metals or metalliferous mineral products. Part II includes 30 chapters, each relating to one or a group of nonmetallic mineral products, including the mineral fuels, coal, oil and gas.

The publication follows the form of previous reports and goes into detail in presenting data gathered from producers of various minerals in all sections of the country. Though belated, this publication gives authoritative statistics not available elsewhere.

Scanning the Technology of Steel

A Digest of Important Developments in Scientific Research, Engineering Progress and Operating Procedure Pertaining to the Production, Processing, Application and Performance of Steel

Hardened Tool Steel

Fundamental properties which can affect the usefulness of tool steels, discused by J. V. Emmons, in preprint paper No 35, *American Society for Testing Materials,* 1931, 30 *pp.,* 21 *illusts.*

This paper reviews previous investigations on the mechanical properties of hardened tool steel. The utilization of various methods of testing for measuring such properties also is discussed. A method of measuring the properties of strength and plasticity in hardened steels by means of a torsion test has been developed and is described in detail. From the measured properties of strength and plasticity, a value known as a coefficient of toughness is calculated. By use of this method, a study is made of the properties of a typical tool steel over a wide range of heat treatments. The Rockwell hardness is determined and the microstructure recorded for the purpose of comparison. An analysis is made of these results upon the typical steel and the several properties are correlated. The bearing of the results obtained upon an existing theory of hardness is pointed out. Conclusions are drawn as to the nature of the typical tool steel investigated, the theories in regard to the decomposition products of austenite and their properties and upon the general utility of the method.

—STEEL, 7-23-31

Motorized Roll Tables

Motorization of run-out table rollers in skelp mill, by Strickland Kneass, in Electrical World, July 11, 1931, *p.* 60, 1½ *pp.,* 3 *illusts.*

Run-out table rollers on the 14 to 9-inch skelp mill of the A. M. Byers Co. are driven by 80 fractional horsepower motors, with speeds 256/700 revolutions per minute. The motors are totally inclosed and have a tapered roll mounted directly on the shaft extension on both sides. Two motor-generator sets are installed, one to supply power, the other a spare.

The run-out table rollers on the 20 to 16-inch skelp mill are driven by 65 similar motors, with speeds ranging 144/288 revolutions per minute. The rollers on this table were too long to be mounted on the motor shaft, so an overhung construction was used in which the rotor of the motor is pressed on the roller shaft extension and the stator with dummy end bell is bolted to the roll bearing housing. An unusual feature is the use of small three-pole inclosed circuit breakers with overload trip on each motor.

Greater reliability, greater flexibility and reduced maintenance are advantages claimed for the individual drive arrangement.

—STEEL, 7-23-31

Co-operative Research

Discussion of co-operative industrial research by John B. Whitehead, in Electrical World, July 11, 1931, *p.* 63, 3 *pp., no illusts.*

Industrial research in unsympathetic surroundings and without the guidance of fundamental scientific knowledge has sacrificed at the start its hope of success. It should be recorded as a principle too often overlooked that industrial research will have its best chance for success when planned in the full light of existing scientific knowledge, executed by men trained in research, and conducted under conditions most favorable for each.

Research by individual companies is not enough; co-operative effort should be organized with a view to bringing together both scientific and applied research, with results available to all. Some co-operative research is being undertaken already, but participation has extended slowly.

—STEEL, 7-23-31

Milling with Carbides

Latest developments in faster milling with tungsten and tantalum carbides, by Frank W. Curtis, in Carboloy, May-July, 1931, *p.* 5, 12 *pp.,* 14 *illusts.*

Success in the use of tungsten carbide for milling work is dependent almost entirely upon rigidity, a quality which is essential in cutter, machine and fixture. In addition to rigidity, milling cutters must incorporate adequate support of blades or inserts directly back of their cutting edges, and also positive locking of blades. Advantages of milling with tungsten carbide include higher speeds, less distortion, better finishes and economies such as combining roughing and finishing cuts, elimination of annealing operations, etc.

Machining of steel with tungsten carbide has not been entirely successful due to the cratering action which exists when steel chips pass over the face of a tungsten carbide cutter. This action may be attributed to the strong affinity which tungsten possesses for steel. The difficulty has been remedied in part by the introduction of tantalum carbide cutting tools; tantalum having no affinity for steel. The latter advantage, however, brought up the problem of brazing a tantalum carbide tip to steel; this is now being accomplished successfully.

A number of milling setups are described and illustrated. Twelve points are cited, the enforcement of which will help to produce the best results in milling with tungsten and tantalum carbides.

—STEEL, 7-23-31

Welding of Alloys

Joining alloy steels discussed by Richard Tull, in Journal of the American Welding society, June 1930, *p.* 35, 4½ *pp.,* 7 *illusts.*

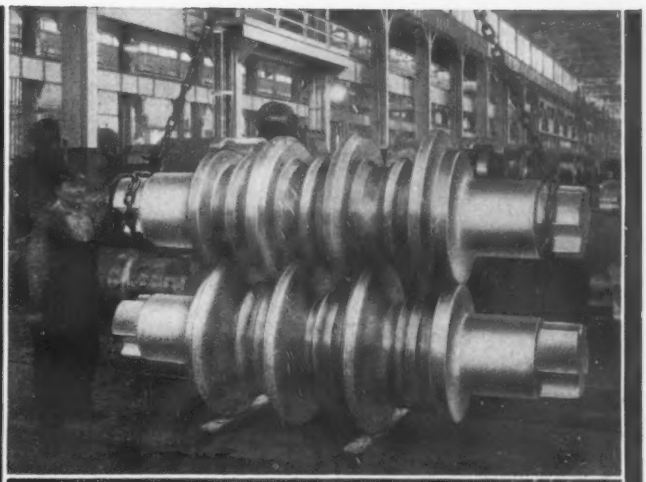
In welding chrome and chrome-nickel steels, a neutral flame always should be used where strength and ductility of the weld are important. An excess acetylene flame increases the carbon content of the weld metal and reduces ductility and resistance to corrosion. An excess oxygen flame leads to excessive amounts of infusible oxides which cause porous welds. The flame should be just large enough to insure proper fusion because too much heat may cause boiling of the metal with subsequent porosity. The welding rod should be of the same composition as the base metal; otherwise the physical and chemical properties of the metal adjacent to the weld may be altered. The use of a proper flux is of the utmost importance because it prevents excessive atmospheric oxidation or carburization by the flame.

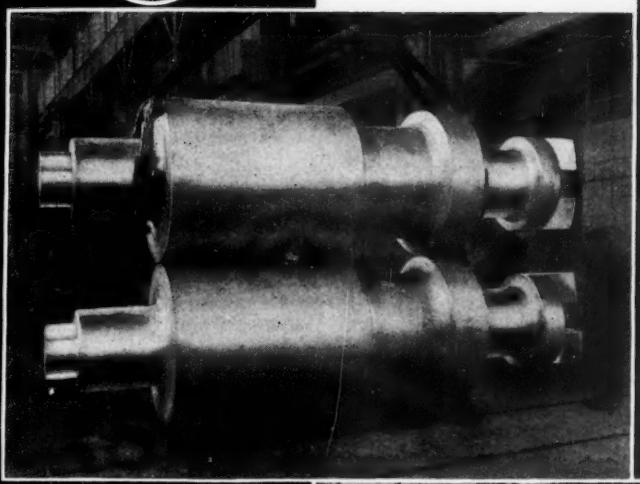
—STEEL, 7-23-31

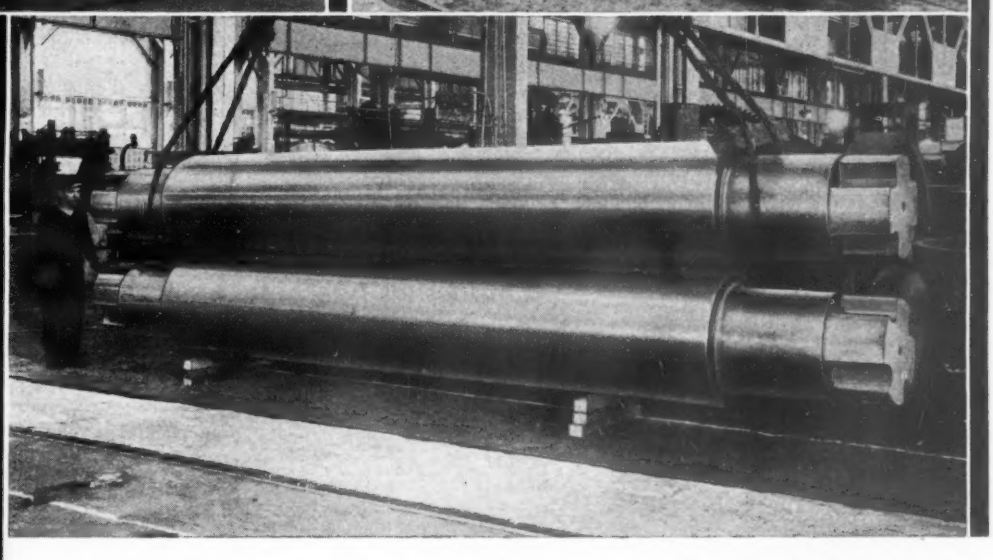
Proper Credit Given

The abstract of a paper on "Fatigue Testing of Wire," by S. M. Shelton, published on Page 60 of the July 16 issue of STEEL, should have credited the paper to the American Society for Testing Materials instead of the American Society for Steel Treating.

ROLLS







"MESTA Special"

Alloy Steel Rolls

Carbon Steel Rolls

Chilled Iron Rolls

Fine Grain Iron Rolls

Alloy Iron Rolls

Sand Iron Rolls

MESTA MACHINE COMPANY

Pittsburgh, Penna., U. S. A.

Mesta

Machine Tools and Plant Equipment

«Without machine tools modern machinery could not be built.»
—Joseph W. Roe

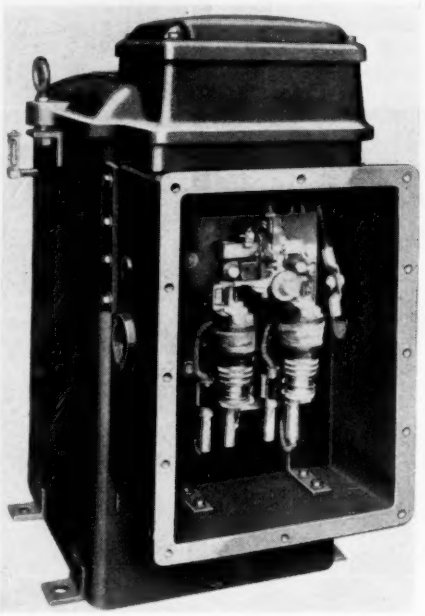
Explosion-Proof Starter Has Low Maintenance

Electric Controller & Mfg. Co., 2700 East Seventy-ninth street, Cleveland, has designed a new line of explosion-proof motor starters. An accompanying illustration shows one of the new starters, an across-the-line type which provides for full voltage starting of squirrel-cage motors. It may be used also with an automatic field switching panel for synchronous motors and may be used for the control of the primary of slip-ring motors.

As shown in the illustration, the oil tank which contains the main line contactor is equipped with a sight oil gage to indicate the oil level inside the tank. Bolted to the rear of the tank is an explosion-proof case which contains the overload relay panel and which also serves as a conduit connection box. The leads which come from the main line contactor for external connections pass through stuffing boxes located in the top of this explosion-proof case.

The design of the starter is such that it not only meets requirements of the Underwriters' specifications but also reduces maintenance to a considerable degree, due to the fact that the operating mechanism is always lubricated and protected against moisture and corrosion. This means that only an occasional inspection of contacts is required to secure satisfactory operation of this sealed unit.

The manufacturer is prepared to furnish many other types of starters, built in this same manner.



Explosion-proof motor starter built by Electric Controller & Mfg. Co.

◆

Embossing Machine Stamps Data on Metal Tags

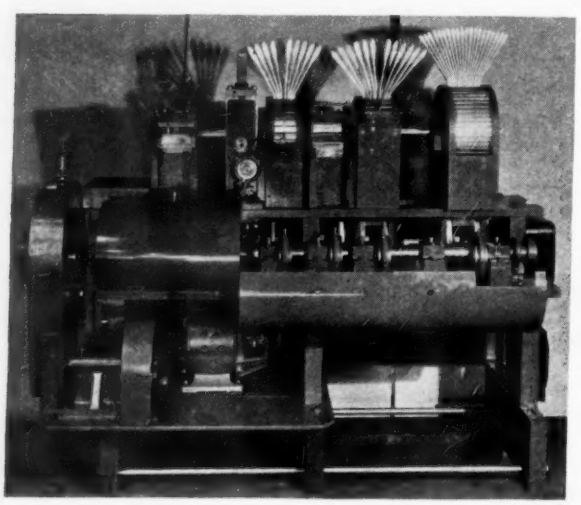
Pannier Bros. Stamp Co., 207 Sandusky street, Pittsburgh, has placed on the market an embossing machine with four embossing heads for marking zinc tape with various identifying words and numbers. The accompanying illustration shows a rear view of the machine. Blank zinc tape 2½ inches wide is fed into the machine at the right, in the illustration, and brought up to and engaged by the roll feed. The first embossing head has 20 engraved embossing wheels and has a capacity for embossing a company name of 20 letters and spaces. The fan-shaped group of levers at the top is manipulated back and forth to spell the desired name. This head embosses the top line of the tag.

Eight Lines on Tag

The second embossing head, from right to left, has 12 engraved embossing wheels for stamping information on the third line of the tag. The first six wheels are set for embossing the order number; the other six for the length.

The third embossing head stamps the words "Order No." and "Length" in the second line; "Size" in the fourth line; "Pcs." (pieces), "Weight" and "Heat No." in the fifth line; and the consignor's name and address in the seventh and eighth lines. An embossing die with these captions is used in this head to emboss all these lines.

The fourth embossing head, at the left, has nine wheels and, when set properly, embosses the information in the fourth line after the word "Size." The roll feed carries the tape through the machine and brings it up to the piercing and cutting-off head where holes are punched and the completed tag cut off from the strip of tape. The machine is driven by a 1-horsepower motor through silent chain drive. When all four heads are set and the motor started the machine turns out tags continuously, each one a duplicate of the first setting.

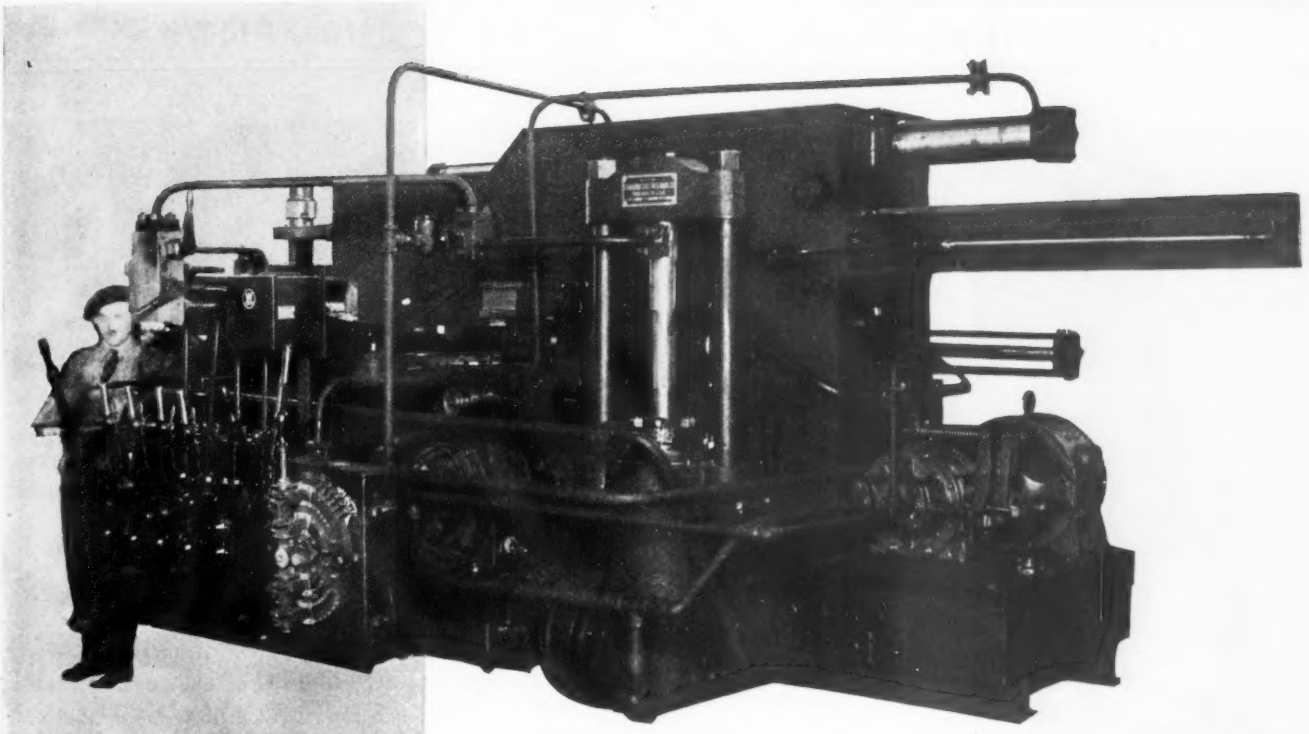


REAR view of machine for embossing metal tags, built by Pannier Bros. Stamp Co. The fan-shaped projections at the top are levers for setting the four embossing heads

◆

Mechanical Riveter Shows Power Economy

Norin Engineering Co., 355 North Union Park court, Chicago, is placing on the market a mechanical riveter driven by an electric motor mounted in the head frame with the plunger mechanism, as shown in an illustration on Page 44. Economy



Patent Applied For

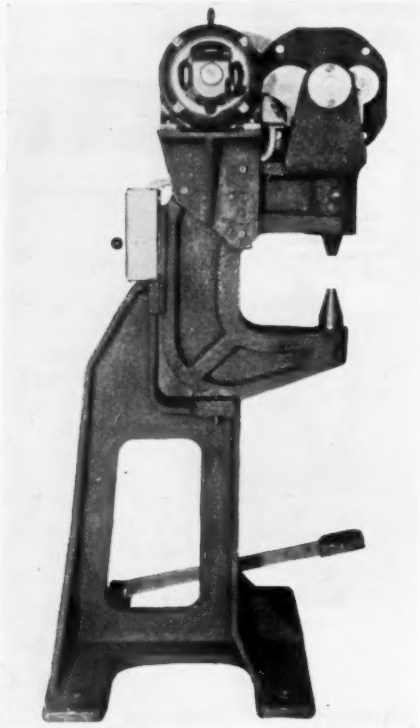
WE QUESTION **YOUR** ABILITY TO MAKE USE OF THIS MACHINE

. . . yet we make known its birth—believing that the technically minded reader will find interest in the new and greater achievements of the other man's business.

The device pictured above—part hydraulic . . . part mechanical, termed—an annealing box welding machine, was fully designed and manufactured by Birdsboro for the National Wrought Iron Annealing Box Company of Washington, Penna. It serves to both assemble and weld head to shell of the annealing box, cutting this operation time from two hours to twenty minutes . . . The apparatus being self contained and movable on floor track, has all controls centralized for operator.

Birdsboro caters to the manufacturer with the baffling problem—continuing to design and build the standard in both steel mill and hydraulic equipment.

BIRDSBORO
STEEL FOUNDRY AND MACHINE COMPANY
DESIGNERS AND BUILDERS
BIRDSBORO, PENNSYLVANIA



Norin Engineering Co. mechanical riveter with drive motor mounted in the head frame

of power is claimed for the riveter in that the machine is driven by a 1½-horsepower motor for a pressure of 25 tons, as compared with about 5 horsepower required for the same pressure in riveting with a pneumatic riveter.

Energy is delivered from a flywheel, the power being transmitted through planetary gears to a release clutch and an operating clutch. The former releases when the maximum load is exerted and the machine parts thus cannot be overloaded. Added flexibility is claimed through the release clutch. The operating clutch never is shifted under load. Rivets are driven with one stroke, the plunger moving automatically on the return.

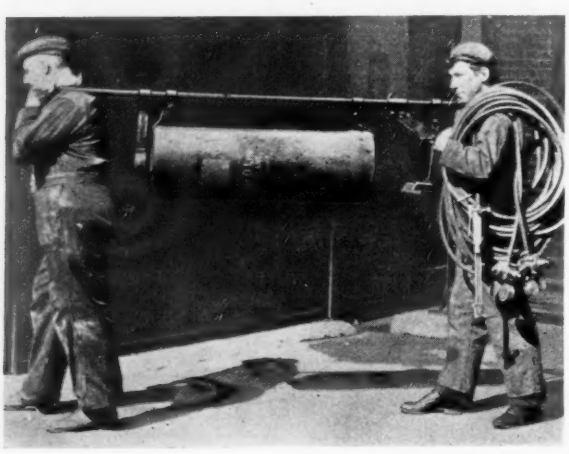
On the shaft from the driving mechanism is an arm with a hardened and ground steel roller, which works on a cam fastened to the plunger. The cam is so designed as to give a fast motion of the plunger at the beginning of the stroke, and as the speed decreases the pressure increases. The last portion of the riveting stroke develops a uniform pressure which provides for the driving of rivets in various riveting grips.

◆

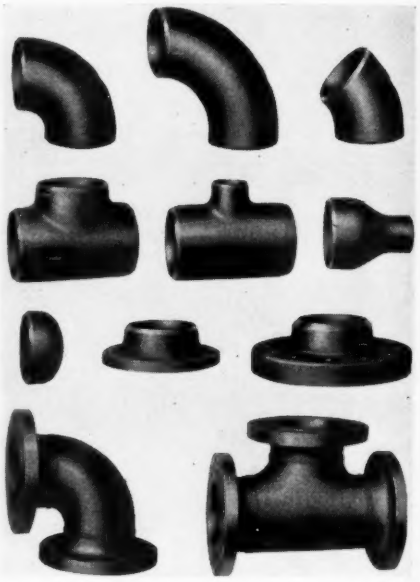
Carrier Handles All Types Of Cylinders Safely

Carbo-Oxygen Co., Benedum-Trees building, Pittsburgh, has placed on the market a special type of carrier for transporting cylinders of oxygen and acetylene. The carrier, shown in an accompanying illustration, is handled by two men and consists of several members, the main one being a supporting beam constructed of standard steel pipe, to one end of which is attached permanently a ring or collar. This collar is of ⅛ x 2-inch flat steel and is designed to hold the valve end (cap attached) of the oxygen cylinder, or similar cylinder. The other end of the cylinder is supported in a forked hook constructed of ¼ x 1½-inch flat steel, the upper end of which is attached to the hinged end portion of the supporting beam. This hook, which has two supporting lugs, is brought into place under and behind the base end of the cylinder to be carried, by applying an upward lift to the hinged end portion of the supporting beam, the cylinder being released by reversing this action.

For carrying the Prest-O-Lite-type of acetylene cylinder, two swinging hooks of ¼ x 1¼-inch flat steel are provided,



SPECIAL type of carrier, designed by the Carbo-Oxygen Co. to provide a simple and safe method of transporting cylinders of oxygen and acetylene



Seamless steel fittings for welded pipe work, made by Taylor Forge & Pipe Works

attached to the middle section of the supporting beam. These hooks engage the rims of the concave top and bottom of this type cylinder, the forward hook being fixed permanently on the beam while the other hook is slid along the beam to the desired point and then tightened in place. To prevent this hook from changing its position a safety clamp is attached tightly to the supporting beam behind the sliding hook.

When the Carbo-type acetylene cylinders are to be carried, the ring or collar previously mentioned for use with oxygen cylinders, supports the valve or top end of the cylinder while the sliding hook and safety clamp are moved forward along the supporting beam to the required position and tightened in place. The sliding hook engages the rim of the base of this type cylinder.

◆

Develops Special Fittings For Welded Pipe Systems

Taylor Forge & Pipe Works, P. O. box 485, Chicago, has developed a complete line of seamless steel pipe fittings for welding, consisting of elbows, tees, reducing tees, bull plugs and reducing nipples as well as forged steel butt welding flanges. All sizes to 24-inch inclusive will be ready for distribution within the near future, but at the present only sizes 12 inches and smaller are available. The tees range in size from 2 to 8 inches.

Use of these pipe fittings, shown in an accompanying illustration, permits entire pipe systems to be fabri-

cated by welding, with only circumferential welds being required. The elbows are made without thinning or buckling of the walls, and are provided with short tangents to facilitate welding and accurate lining up. The end to center to end dimension is equal to 1½ times the nominal pipe diameter. The ends are machine tool beveled, providing a clean, smooth surface for welding.

Forged Tubular Products

The tees are forged tubular products, not forged solid and then drilled; they are made to pipe thickness at the ends, with the body thickened up especially around the outlet to give the required reinforcement. The basis of design has been to make the fittings of an installation of welded fabricated pipe the strongest parts of the line.

Reducing nipples are designed with length sufficiently great to aid installation, yet shorter than the screwed reducing nipple. Bull plugs are forged to an ellipsoidal shape to withstand end pressure. Butt welding flanges, providing for the insertion of valves in welded pipe installations, have a long fillet at the hub to prevent distortion, and are made to satisfy full standard strength requirements.

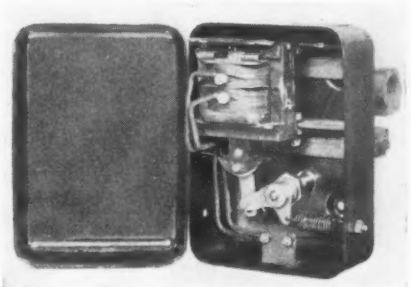
◆

Solenoid-Operated Valves Control Pressure Lines

General Electric Co., Schenectady, N. Y., announces a new solenoid-operated valve, for controlling liquids and gases under pressure. The valve body is made of high-grade castings in two sections with the upper section bolted to the lower. Threads for pipe connections are standard pipe threads.

The gland connected to the operating mechanism is of the rotary type which reduces the friction load. The seat and poppet are ground carefully to fit and the metal is distributed so that a wide seat is obtained, giving long life and reliable operation, according to the manufacturer. The valve can be made normally open or normally closed, in the field, by drilling the mounting holes in the case and transferring the solenoid and operating mechanism to the opposite side. The valve is of the unbalanced type and requires low power for operation.

A standard solenoid is used, with all coils designed for continuous duty. The operating mechanism is so arranged that the solenoid plunger is permitted to accelerate without load for a fraction of the stroke, thereby assisting in quick, reliable



General Electric solenoid-operated valve control for liquid pressure lines

operation. A sheet metal case with a hinged cover encloses the solenoid and operating mechanism. The accompanying illustration shows a front view with the cover opened to show the interior mechanism. Suitable knockouts are provided in the case for conduit connection.

◆

Gasoline Lift Trucks Have Four-Wheel Steering

Clark Tructractor Co., Battle Creek, Mich., is manufacturing a new line of lift trucks with four-wheel steer and rear wheel drives, on which the steering wheels can be turned to a sharp angle, enabling the operator to enter a freight car and spot his load at the far end. An accompanying illustration shows one of the new power trucks in action.

A locomotive-type cast steel frame, full floating rear axle, powerful hydraulic lifting mechanism with automatic control, positive brakes and a tractor-type gas engine with engine speed governed to less than 1400 revolutions per minute, furnishing rapid acceleration under load, are features which are claimed to insure long life and uninterrupted service.

One model has a narrow platform to accommodate standard 12-inch under clearance skid platforms. It lifts a 3-ton load in 8 seconds and its turning radius of 94 inches permits turning the corner of two intersecting 64-inch aisles with ample clearance. A heavier model lifts 4 tons in 8 seconds, has a speed of from 1 to 6 miles per hour and turns on a 94-inch radius. In both models maximum engine power is delivered to the two rear driving wheels through direct transmission. Special wide tires under the platform are claimed to reduce tire wear.

◆

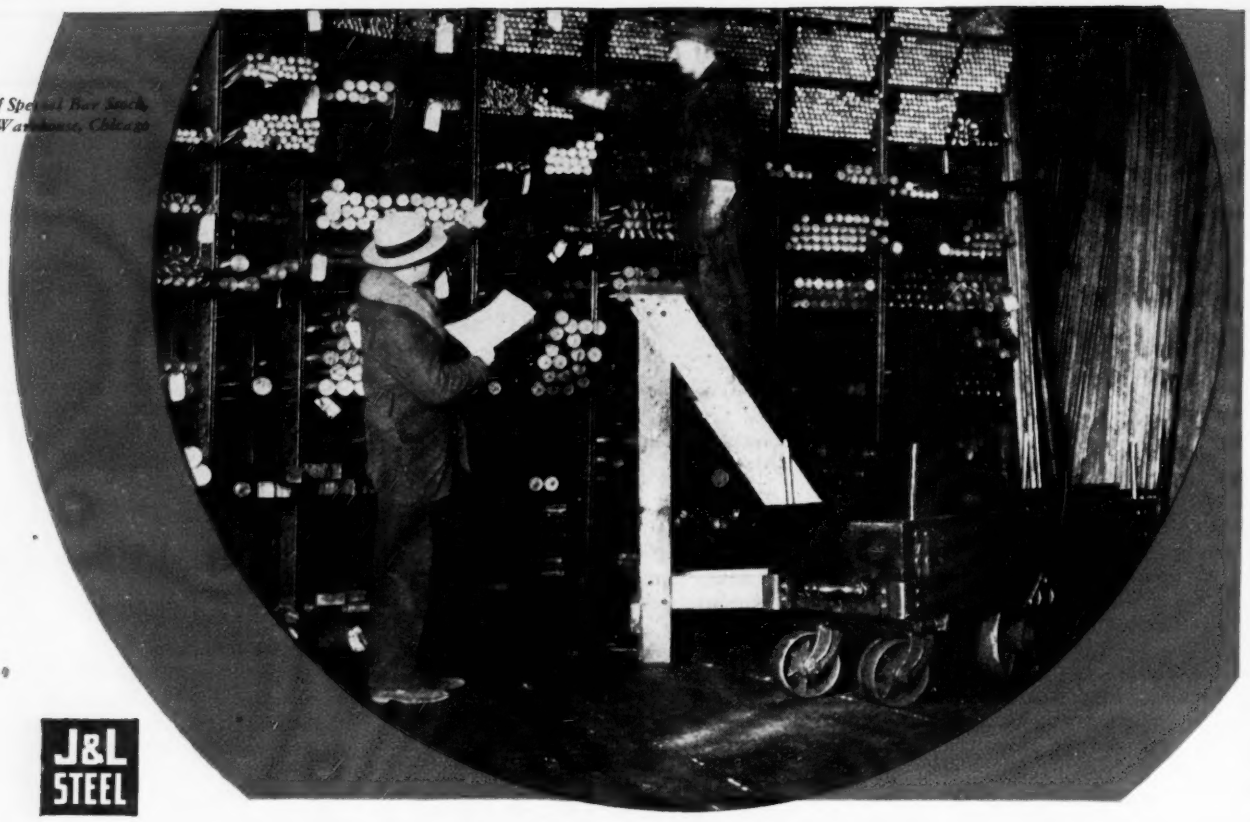
New Manual Starter Built For Small Motors

Cutler-Hammer Inc., 320 North Twelfth street, Milwaukee, announces a new three-pole across-the-line type manual starter for all types of alternating-current squirrel-cage motors up to 2 horsepower. Features of the starter, according to the manufacturer are: Small size, thermal overload relays; all poles trip on overload; twin break silver-to-silver butt-type contacts; easy operation; and a 100 per cent cover interlock.

Dimensions Are Given

The starter is 4 7/16 inches wide by 8 9/16 inches high by 3⅞ inches deep, and is small enough to be mounted directly on a machine near the operator or in any other restricted space. The thermal overload relays operate directly on the contact mechanism and open all three poles on an overload. The twin break contact mechanism gives a double break in each line, to reduce the voltage rise and consequent arcing when operating the circuit. The cover interlock prevents opening the enclosing case if the motor is in operation, and also permits padlocking the enclosing case and the operating lever in an "off" position.

CLARK Tructractor Co. designed this new lift truck, driven by gas engine and capable of turning sharp corners through its four-wheel steering



Part of Special Bar Stock, J & L Warehouse, Chicago

J&L STEEL

J&L CONTROL BRINGS YOU THE SAME STEEL YOU USED THE LAST TIME . . . . . .

When you've found just the right steel for your needs, you can always be sure of duplicating it from the stocks in your J & L Warehouse.

For example, J & L Warehouses carry, in addition to steel in customary shapes, qualities and sizes, a comprehensive line of S. A. E. hot rolled and cold finished alloy steels, and hot rolled and cold finished Jalcase; and S. A. E. specification hot rolled and cold finished carbon steel. The J & L Combined Stock List, in addition to listing the grades of steel carried, gives you the chemical properties, the physical characteristics, and the uses of various steels, together with other information which makes the duplication of steel previously obtained simple and positive.

If you buy steel, the J & L Stock List should be on your desk. It will save you much time and trouble.

JONES & LAUGHLIN STEEL CORPORATION
AMERICAN IRON AND STEEL WORKS
PITTSBURGH

Sales Offices: Atlanta, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Denver, Detroit, Erie, Los Angeles, Memphis, Milwaukee, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, San Francisco
Canadian Representatives: JONES & LAUGHLIN STEEL PRODUCTS COMPANY, Pittsburgh, Pa., U. S. A., and Toronto, Ont., Canada

J&L WAREHOUSES

PHONE	CHICAGO	CINCINNATI	DETROIT	NEW ORLEANS	PITTSBURGH
	Virginia 1600	Main 2324	Melrose 6650	Franklin 1131	Hemlock 1000

LOUISVILLE—Magnolia 1693 . . . Stock of Bars for Concrete Reinforcement and Bar Fabricating Yard
MEMPHIS—6-4836 . . . Distributing Warehouse for Pipe, Sheets, Spikes and Wire Products. Reinforcing Bar Warehouse and Fabricating Shop

FOR EVERY NEED . . . THE RIGHT QUALITY OF STEEL IN A FULL RANGE OF SIZES . . . . . .

AND BE SURE . .

Operations Strike New Low Mark

Drop 3 Points to 30 Per Cent—Confidence in Fall Upturn Still Strong—Heavy Finished Steel Prices More Stable—Plate, Shape Demands Brisk

STEEL producers entertain no illusions of a genuinely-encouraging upturn in demand before late August or September—in fact, some will regard the attainment of a 50 per cent operating rate by fall a noteworthy achievement—yet the increasing attention being paid to prices is an earnest that the industry is preparing for the long pull toward improvement.

Heavy finished steel appears stabilized at 1.60c, Pittsburgh, or equivalent, which is a revision downward for small users but an increase for tonnage buyers. Sheet and strip prices, based on the new classification, hold uniformly on what little business offers. The $1.90 price on nails to jobbers is a reaffirmation of a lapsed level, but wire and staples are weaker.

Sentiment continues moderately stronger despite the fact steelmaking operations have fallen to 30 per cent, 3 points below last week, and the lowest since the stock market broke in the fall of 1929. Of the major districts, Youngstown is down 4 points to 34 per cent; Pittsburgh has dropped 1½ points to 31 per cent; Chicago is down 1 point to 29 per cent, and eastern Pennsylvania is unchanged at 33½ per cent. Of the minor districts, Cleveland has dropped 8 points to 27 per cent; Birmingham is down 5 points to 35 per cent, and Buffalo is up 5 points to 43 per cent.

For plates, the market is somewhat more active. Navy destroyers on which bids open Oct. 1 require 8000 tons, chiefly plates; 13 tanks placed by the Atlantic Refining Co. call for 6000 tons; other miscellaneous plate needs aggregate 10,000 tons. Bids are going in on 10,000 tons of pipe for elevated highway foundations in New York, and on 5000 tons for the Iroquois Gas Co. in northern New York.

Although San Francisco has requested a 6-month guarantee from low bidders on the 106,000 tons of steel for its Golden Gate bridge, indicating delay in marketing bonds, structural material still dominates the finished steel markets. Including 58,700 tons for the revived bridge projects at New Orleans and 12,500 tons for the Bankers' Trust building at New York, 126,500 tons in fresh inquiry is out. This week's awards, at 24,647 tons, compare with 23,000 tons last week.

Automobile production, holding closely at 60,000 units weekly in the first half of July, appears to be declining rapidly in the last half. Plymouth, riding the crest of a new model, is a heavier buyer of steel, but its expanding schedule is partially at the expense of Ford and Chevrolet.

Railroad requirements for steel this week are chiefly expressed by Northern Pacific's inquiry for 500 box car underframes and superstructures, and Norfolk & Western's purchase of 3000 tons of steel for repairs.

The scrap market continues to consolidate its recent price gains. Dealers have been required to raise their bids in numerous instances to obtain material, indicating a growing scarcity. Consumption of pig iron is believed to be at the low point of the year, and melters show little interest in forward requirements for either pig iron or coke. Two additional blast furnaces in Alabama have been blown out.

STEEL's price composite for steelworks scrap again registers an advance, up 21 cents this week to $8.87, due mainly to an increase of 75 cents a ton in heavy melting steel in eastern Pennsylvania, and of 50 cents a ton for heavy melting and compressed scrap at Pittsburgh. The general iron and steel composite is unchanged this week at $30.98, while the composite representing finished steel remains at $48.52.

Composite Market Averages

	This Week (July 22)	Last Week (July 15)	One Month Ago (June, 1931)	Three Months Ago (April, 1931)	One Year Ago (July, 1930)	Ten Years Ago (July, 1921)
Iron and Steel Composite	$30.98	$30.98	$31.02	$31.59	$33.21	$38.14
Finished Steel Composite	48.52	48.52	48.60	49.22	51.90	60.54
Steelworks Scrap Composite	8.87	8.66	8.84	10.12	12.58	9.94

Iron and Steel Composite:—Pig iron, billets, slabs, sheet bars, wire rods, pipe, tin plate, nails, sheets, plates, shapes, bars. **Finished Steel Composite:**—Plates, shapes, bars, sheets, hot strip, nails, wire, tin plate, pipe. **Steelworks Scrap Composite:**—Melting steel, compressed sheets.

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	July 22, 1931	June, 1931	April, 1931	July, 1930
PIG IRON				
Bessemer, del. Pittsburgh	$18.26	18.26	18.26	20.46
Basic, valley	17.00	17.00	17.00	18.20
Basic, eastern del. eastern Pa.	16.75	17.00	17.25	18.00
No. 2 foundry, del. Pittsburgh	18.26	18.26	18.26	19.46
No. 2 foundry, Chicago	17.50	17.50	17.50	17.90
*Southern No. 2, Birmingham	12.00	12.00	13.00	14.00
**No. 2X, Virginia furnace	18.25	18.25	18.25	18.25
**No. 2X, Eastern del., Phila.	17.76	17.76	18.26	20.26
Malleable, valley	17.00	17.00	17.00	18.70
Malleable, Chicago	17.50	17.50	17.50	17.90
Lake Superior, charcoal, del. Chi.	27.04	27.04	27.04	27.04
Gray forge, del. Pittsburgh	17.63	17.63	17.63	18.83
Ferromanganese, del. Pittsburgh	89.79	89.79	89.79	103.79

*1.75 to 2.25 silicon. For local delivery. Northern shipments based on $11, Birmingham. **2.25 to 2.75 silicon.

COKE				
Connellsville furnace, ovens	2.40	2.40	2.50	2.50
Connellsville foundry, ovens	3.25	3.25	3.25	3.50
SEMIFINISHED MATERIAL				
Shee bars, open-hearth, Youngs.	29.00	29.00	30.00	31.00
Sheet bars, open-hearth, Pitts.	29.00	29.00	30.00	31.00
Billets, open-hearth, Pittsburgh	29.00	29.00	30.00	31.00
Wire rods, Pittsburgh	35.00	35.00	36.00	36.00

	July 22, 1931	June, 1931	April, 1931	July, 1930
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.60	1.65	1.65	1.70
Steel bars, Chicago	1.70	1.70	1.80	1.80
Steel bars, Philadelphia	1.89	1.94	1.96	1.94
Iron bars, Chicago	1.70	1.70	1.80	1.90
Shapes, Pittsburgh	1.60	1.65	1.65	1.65
Shapes, Philadelphia	1.76	1.76	1.78	1.66
Shapes, Chicago	1.70	1.70	1.80	1.75
Tank plates, Pittsburgh	1.60	1.65	1.65	1.65
Tank plates, Philadelphia	1.80½	1.85½	1.85½	1.85½
Tank plates, Chicago	1.70	1.70	1.80	1.75
Sheets, No. 10 blue anneal., Pitts.	1.85	1.85	1.85	2.00
†Sheets, No. 24, hot, ann., Pitts.	2.40	2.15	2.25	2.55
Sheets, No. 24, galvan., Pitts.	2.90	2.80	2.85	3.15
Sheets, No. 10 blue anneal., Chi.	2.00	2.00	2.05	2.15
†Sheets, No. 24, hot, ann., Chi.	2.55	2.40	2.45	2.70
Sheets, No. 24 galvan., Chi.	3.00	2.95	3.00	3.35
Plain wire, Pittsburgh	2.20	2.20	2.20	2.30
Wire nails, Pittsburgh	1.80	1.80	1.90	2.10
Tin plate, per base box, Pitts.	5.00	5.00	5.00	5.25

†Comparisons are with old classification No. 24 black sheets.

SCRAP				
Heay melting steel, Pitts.	10.75	10.30	12.50	•14.90
Heavy melting steel, eastern Pa.	8.75	8.75	10.00	12.50
Heavy melting steel, Chicago	8.50	8.50	9.60	12.00
No. 1 wrought, eastern Pa.	10.00	10.00	11.00	14.25
No. 1 wrought, Chicago	8.25	8.25	8.80	11.25
Rails for rolling, Chicago	10.50	10.90	11.85	14.50

Sheets

New Prices Holding but Orders Are Small—July Shipments Expected To Show Moderate Gain

SHEET PRICES, PAGE 49

Pittsburgh—Only a small volume of new sheet business is being received but producers express considerable satisfaction over the stability of new prices on such orders. Incoming business is made up mainly of small lots with producers quoting 2.40c, Pittsburgh, for hot-rolled annealed sheet, 2.90c for galvanized, 1.85c for blue annealed and 1.70c for No. 10 gage hot rolled. Operations show a slight gain, mills benefitting from the orders received in closing out old contracts. July shipments are expected to be moderately ahead of those of June. Output averages 35 to 40 per cent. Little change is noted in requirements of most consumers although the tendency in automotive demand still is downward. The next two weeks are expected to determine to a large extent what success producers will have in establishing the new prices announced for this quarter.

Philadelphia—Sheet consumption appears to be slightly better. While some inquiry is pending, actual buying is small, and the new prices have not yet received a real test.

New York—On a limited volume of orders sheets are holding at the recently adjusted prices. The market, however, still is untested on the new basis as most buyers covered through July. The first two weeks of August are expected to bring a real test.

Youngstown, O.—Subsiding slowly but steadily, independent sheet mill operating rates in this district are almost at the January minimum. Sales of full-finished sheets are approaching the smallest volume in months, entailing irregularity of independent mill operations. Shipments of the small lots still are fairly regular but are expected to taper off toward the end of July. Demand for galvanized and blue annealed stock leads to occasional shipments from producing mills here. Sales are being made on the new classification bases. Quotations no longer appear to be a matter of discussion.

Cleveland—Sheet bookings have been further depressed. Prices under the new gage classification are holding, but so far business is negligible. Recent offers by several metal furniture manufacturers to place tonnage at the old figures on 50 and 75-ton lots have been refused. Mills are uniformly quoting the new prices. For a small lot of galvanized sheets four bidders recently submitted identical bids, and the order was placed at 2.90c, Pittsburgh. Another inquiry in which electrical sheets were specified also developed the same uniformity in bidding. Autobody sheets are in extremely light volume locally, but in the Detroit district the 3.10c, base, Pittsburgh, is being quoted for No. 20 gage. Newton Steel Co., which recently concentrated manufacturing activities at Monroe, Mich., is cleaning up stocks at Newton Falls, O., shipping to eastern points.

Cincinnati—Sheet mill production schedules in this district remain unchanged. New business reflects seasonal dullness.

Chicago—Accumulated sheet orders from irregular operations in the past week sustain 50 per cent mill operations, although new orders have been negligible in the last few days. Jobbers have been ordering less-than-carload lots. Further contracts for sheets on the basis of 3.00c, mills, for No. 24 galvanizd, and 2.50c for No. 24 hot-rolled annealed have been signed, but contract buyers are obligating themselves usually for small orders.

St. Louis—Producers and distributors of sheets report a fairly satisfactory situation. Substantial orders were booked just prior to July 1, and will insure mill operations at 40 to 50 per cent for the next four to five weeks.

Current Finished Steel Prices

Prices in cents per pound unless otherwise stated

Steel Sheets

HOT ROLLED No. 10

Pittsburgh base	1.70c
Gary, Ind. Harbor, base	1.80c
Chicago, del.	1.85c
Philadelphia, del.	1.99c
Birmingham, base	1.85c
St. Louis, del.	2.60½c

BLUE ANNEALED No. 9-10

Pittsburgh, base	1.85c
Chicago, district mills	1.95c
Chicago, delivered	2.00c
Philadelphia, del.	2.14c
St. Louis, delivered	2.20½c
Birmingham	2.00c to 2.05c
San Francisco, c.i.f.	2.50c

HOT ROLLED ANNEALED No. 24

Pittsburgh, base	2.40c
Gary, Ind. Harbor, base	2.50c
Chicago, del.	2.55c
Philadelphia, del.	2.69c
Birmingham, base	2.55c
St. Louis, del.	2.75½c

GALVANIZED No. 24

Pittsburgh, base	2.90c
Gary, Ind. Harbor, base	3.00c
Chicago, del.	3.05c
Philadelphia, base	3.19c
Birmingham, base	3.05c
St. Louis, del.	3.25½c

AUTOMOBILE No. 20

Pittsburgh, base	3.10c

FURNITURE

Pitts., No. 10 heavy	2.75c
Pitts., No. 20 light	3.35c

TIN MILL BLACK No. 28

Pittsburgh, base	2.55c to 2.65c
Gary base	2.65c to 2.75c
St. Louis, del.	2.90½c

HEAVY COLD ROLLED No. 10

Pittsburgh base	2.35c
Gary, Ind. Harbor, base	2.45c
Chicago, del.	2.50c
Philadelphia, del.	2.64c
St. Louis, del.	2.70½c

COLD ROLLED No. 20

Pittsburgh, base	2.95c
Gary, Ind. Harbor, base	3.05c
Chicago, del.	3.10c
Philadelphia, del.	3.24c
St. Louis, del.	3.30½c

Tin and Terne Plate

Prices per 100 pound box Pittsburgh

Tin plate, coke base	$5.00

Gary, Ind., base 10 cents higher.

Long ternes, 24, unassorted, lb.	3.15c

Wire Products

(To Jobbers-Merchant Trade)

F.o.b. mills, 100 lb. keg

Standard wire nails	$1.90 and 2.00
Cement coated nails	1.90 and 2.00
Galvanized nails	3.90 and 4.00

(Per pound)

Polished staples	2.25c and 2.35c
Galvanized staples	2.50c and 2.60c
Barbed wire, gal.	2.45c and 2.55c
Annealed fence wire	2.25c and 2.35c
Galvanized wire	2.70c and 2.80c

Woven wire fencing, retailers, Pittsburgh-Cleveland, net ton $65.

(To Manufacturing Trade)

Plain wire, 6-9 gage	2.20c
Spring wire	3.20c

Joliet, DeKalb, Waukegan, Ill., Anderson, Ind., Chicago, $1 over Pitts.-Cleve.; Duluth and Worcester, Mass., $2 higher; Fairfield, Ala., $3 higher.

Rivets

Struc. c.l., Pitts.-Cleve.	2.75c
Struc., c.l., Chicago	2.85c
7/16-in. smaller, Pitts.	70, 10 and 5 off
Chi., Cleve.	70 to 70, 10 and 5 off

Steel Plates

Pittsburgh, base	1.60c
Philadelphia, del.	1.80½c to 1.85½c
New York, delivered	1.88c
Boston, delivered	1.98½c
Chicago, base	**1.70c to 1.80c**
Cleveland, base, for railroads	1.65c
Lackawanna, N. Y., base	1.75c to 1.80c
Birmingham, base	1.80c to 1.85c
Coatesville, Pa., base	1.70c
Pacific Coast, c.i.f	2.00c
St. Louis, del.	1.95½c

Structural Shapes

Pittsburgh, base	1.60c
Philadelphia, del.	1.76c
New York, del.	1.85½c
Boston, del.	**1.98½c**
Chicago, base	**1.70c to 1.80c**
Cleveland, delivered	1.78½c
Lackawanna, N. Y., base	**1.75c to 1.80c**
Birmingham base	**1.80c to 1.85c**
Pacific Coast, c.i.f.	**2.05c to 2.15c**

Bars

SOFT STEEL

Pittsburgh, base	1.60c
Chicago, base	1.70c
Birmingham base	1.80c to 1.85c
Lackawanna, N. Y., base	1.70c to 1.75c
Pacific Coast, c.i.f.	2.05c
Detroit, base	1.75c
Cleveland, base, local del.	1.70c
Cleveland base, out. del.	1.65c
Philadelphia, del.	1.89c to 1.94c
New York, del.	1.93c
Boston, del.	2.00c
Pittsburgh, cold finish	**1.85c**
Pittsburgh, forg. qual.	**1.90c**

RAIL STEEL

Chicago Heights	1.60c
Eastern mills	1.50c to 1.55c
Pittsburgh	1.30c to 1.35c

IRON

Chicago, base	1.70c to 1.80c
New York, delivered	1.93c
Philadelphia, delivered	1.89c
Pittsburgh, refined	2.75c to 4.25c

REINFORCING

Pitts., billet cut lengths	1.75c to 1.85c
Stock lengths, mill	1.60c
Chi., billet	1.60c to 1.80c
Chi., rail steel	1.50c to 1.65c
Chi., rail steel, bridge and culvert	1.65c
Philadelphia, cut lengths	2.14c
Cleveland, cut lengths	1.95c to 2.05c

Cold Finished Bars, Shafting

Base, Pittsburgh, Chicago, Buffalo and Cleveland	2.10c
Shafting, turned and ground, mill	2.45c to 2.90c

Corrosion, Heat Resist. Alloys

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel

Sheets, 35c; plates, 31c; bars, 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	21c	22.5c	25c	30c
Sheets	26c	27.5c	30c	35c
Hot strip	19c	20.5c	23c	28c
Cold strip	28c	29.5c	32c	37c

Carbon 0.12 and under; no nickel. A has chrome 15% and under, B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Wrought Washers

Carloads, Pitts. dist.	$6.50 to $6.75 off
Carloads, Chicago dist.	7.00 to 7.50 off

Alloy Steel

Hot Rolled—F.o.b. Mills

Alloy Quality Bars, 2.65c, mill

S.A.E.	Alloy Diff.	S.A.E.	Alloy Diff.
2000	0.25	1.25-1.75 Ni.	1.05
2100	0.55	5100 .80 - 1.10 Cr.	0.45
2300	1.50	51.00 Cr. spring	0.20
2500	2.25	6100 bars	1.20
3100	0.55	6100 Spring	0.95
3200	1.35	Cr., Ni., Van.	1.50
3300	3.80	Carbon Van.	0.95
3400	3.80	9250 (flats)	0.25
4100 .15 to .25 Mo.	0.50	9250 (rds.,sq.)	0.50
4600 .20 to .30 Mo.			

Strip, Hoops Bands

Hot strip, to 6-in., Pitts.	1.65c
Do, 6 1/16 to 24-in., Pitts.	1.55c
Hot strip, bands 6 in. and under, Chicago	1.75c to 1.80c
Do. 6 1/16 to 24 in.	1.65c to 1.70c
Cooperage hoop, Pitts.	1.70c to 1.80c
Do, Chicago	1.90c
Cold rolled strip, Pitts., Cleve., 3 tons, over	2.15c to 2.25c
Worcester, 3 tons, over	2.30c

Rails, Track Material

Standard bess. and open hearth rails, mill	$43.00
Relay rails, Pitts., 20 to 45 lbs.	$22.00 to $26.00
50 to 75	20.00 to 24.00
80 to 100	24.00 to 27.00
Light rails, 25-45, mills	$34.00
Light rails, Chicago	$36.00
Angle bars, Chi. base	2.75c
Spikes, railroad, mills	2.70c
Spikes, railroad, 7/16-in. and smaller, Pitts.	2.70c
Spikes boat, barge, Pitts.	2.90c
Spikes, railroad, Chi.	2.80c
Track bolts, Pitts., steam roads	3.80c
Do. standard, jobbers	73 off list
Track bolts, Chicago	3.80c
Tie plate, mills	$39.00

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chi.

Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

CARRIAGE BOLTS

All sizes, cut thread ..... 73 and 10 off

Rolled thread ⅜ x 6 and smaller take 10 per cent lower list.

Eagle list ..... 73 and 10 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts ..... 73 and 10 off

Tire bolts, 60, 10 and 10 off.

Stove bolts, 80, 10, 10, 5 off in pkgs.; 80, 10, 5, 2½ off in bulk.

Rolled thread machine bolts, ⅜ x 6 and smaller take 10 per cent lower list.

NUTS

Semifinished ..... 73 and 10 off

HEXAGON CAP SCREWS

Milled ..... 80-10-10-5 off

Upset 1 in. diam. and smaller ..... 85-10 off

SQUARE HEAD SET SCREWS

Milled ..... 80-5 off

Upset 1 in. and smaller ..... 80-10-5 off

Upset, larger than 1 in. ..... 80-5 off

Cut Nails, Chain, Piling

Cut nails, c.l. Pittsburgh 2.50c

Do, less carloads, 5 kegs or over, 2.75c; less than 5 kegs 2.90c.

Chain, BB, BBB, 9/16-1½ in.	33 1/3 off
Sheet piling, Pitts.	1.90c

Bars

Chicago Mills Find Volume Less but Pittsburgh Demand Steady —Prices Hold Fairly Steady

BAR PRICES, PAGE 49

Chicago—Bar orders are not only reduced because of light automotive and parts business, but other seasonal limitations, affecting excavating equipment and road building machinery, have set in. Deformed bars for road work are in unimpaired demand and lead in shipments. Bar mill operations are barely 35 per cent, while alloy bar mills as a group are down to about 25 per cent. Establishment of new bar bases in the East, and a 1.60c price at Pittsburgh, have had little effect in this territory, the base remaining at 1.70c, Chicago. It is considered doubtful whether this would withstand offers of attractive tonnage, but the existing volume is little temptation for concessions. Specifications for bars, as well as plates and shapes, are above the average of a week ago, and contract orders, largely covering specific work, are slightly more numerous. This illustrates the spotty character of bookings resulting from periodic releases from the seasonal buying groups.

New York—Steel bars are generally 1.60c, Pittsburgh, the 1.65c price having practically disappeared. Contracting for third quarter is generally completed and current buying shows little change. Bids are in on several hundred tons of bar steel for the navy yards. Joseph T. Ryerson & Son Inc. is low on most of the tonnage for the eastern yards, while Pacific Coast Steel Corp., San Francisco, is low on part for the western yards.

Philadelphia—Demand for steel bars is somewhat smaller, except for concrete bars, which are more active. Steel bars are 1.60c to 1.65c, Pittsburgh, and concrete bars 1.60c, Pittsburgh, with warehouse shipments in carloads 1.85c, Youngstown or Pittsburgh.

Pittsburgh—Steel bar demand is steady, showing little change from the volume of a month ago and experiencing little effect from recent price revisions. Outstanding contracts at 1.65c, Pittsburgh, have been reduced to 1.60c, which now is the general market.

Cleveland — Steel bar sales are running approximately 15 to 20 per cent below June volume. Tapering demand points clearly to irreducible minimums in the specifications of several local users of merchant bars. The 1.70c, Cleveland local base, continues to be quoted and 1.65c, Cleveland outside delivery is likewise unchanged. In the western part of Ohio no opposition has as yet been encountered in bar sales at 1.65c, Cleveland base, now that a 1.75c, Detroit base, has been established.

Cold-Finished Needs Ebb; Detroit Price Unchanged

Cold Finished Prices, Page 49

Pittsburgh—Cold-finished bar demand continues to reflect declining requirements of the automotive industry. Shipments have moderated slightly and are below the rate of a month ago. Producers profess to expect no price change as a result of recent revisions in the hot-bar market. The market generally is 2.10c, Pittsburgh.

Cleveland—Quotable price remains 2.10c, Cleveland, on cold-finished steel bars. It is understood there is no intention of quoting cold-finished steel on a Detroit base, similar to that established last week in hot-rolled bar stock.

Low Bid on Guard Rail

Washington—A. Leschen & Sons Rope Co., St. Louis, is low on 14,500 feet guard rail cable for the district commissioners with a bid of 4.2c. Cleveland Hardware Co., Cleveland, is low on 1440 hook bolts in connection with the same contract at 11.7c.

Plates

Western Mills Wind Up Pipe Orders and Operations Are Slower —Small Orders Are Plentiful

PLATE PRICES, PAGE 49

Chicago—Rounding up shipments on much of the existing pipe line projects this week, plate mills will show a marked drop in operations for the first time since late last December. It is expected the rate soon will be under 40 per cent. While about 1800 tons of tank plates for oil storage work in the Southwest is on new inquiry, less than 1000 tons have been placed. Relief of depressed oil prices, it is believed, would open important storage projects, as collateral thus would be provided for their financing. Plate prices are based on 1.70c, Chicago. A tank line company has awarded about 1500 tons of tank plates for 100 tank cars now being built.

New York—Minimum on plates is 1.70c, Coatesville, Pa., 1.75c having disappeared. Mills are to make a strong effort to hold to 1.70c. Demand for plates is fair. Two large water lines, one 72-inch at Brooklyn for the board of water supply, and another at Boston will take close to 700 tons of plates. Approximately 700 tons for the New York Central terminal warehouse foundation are reported placed. Shipbuilding demand for plates, outside of government yards, is light. About 250 tons of steel piling are up for a bulkhead in the Erie basin, Brooklyn.

Philadelphia—Plate demand shows a slight increase, with eastern mills operating at 30 to 40 per cent of finishing capacity. Prices range from 1.70c to 1.75c, base, Coatesville, Pa. The Atlantic Refining Co. has placed 13 oil storage tanks for Maryland and Pennsylvania with the Chicago Bridge & Iron Works, requiring 6000 tons of plates. The navy department at Washington will open bids Sept. 16 on 11 destroyers, requiring a total of 8000 tons of plates, shapes and bars, mainly plates.

Pittsburgh—Plate business is confined mainly to small lots with few large projects in prospect. Some plate buying has been done by the Norfolk & Western railroad for car rebuilding, but railroad requirements otherwise are light. Little activity is developing in the river equipment market. Plates now are 1.60c, with higher priced contracts revised to that figure.

Cleveland—After weeks of continued dullness, the past week has seen a decided and marked upswing for some interests in inquiry and orders for several sizes of plates particularly specialties such as floor, diamond plates and plates for boiler tubes. General plate demand, however, fails to record any progress. The market has settled generally to 1.60c, Pittsburgh, as the minimum on all requirements, regardless of size. Locally the 1.65c, Cleveland base, is representative only of rail-

road plate. Others have been inquiring for this price, to find it a special figure. Award of the 2500-ton steel pipe line, Belvoir boulevard, still is pending. Reeves Bros., Alliance, O., has taken 360 tons in tanks for the Gulf Refining Co.

Contracts Placed

6000 tons, 13 oil storage tanks for Atlantic Refining Co., to Chicago Bridge & Iron Works, Chicago.

1600 tons, 8 miles, 16 inch water pipe, for Mountain Lakes Water Co., Seattle, to Steel Tank & Pipe Co., Portland, Oreg.

1500 tons, plates for 100 tank cars for Union Tank Car Co., New York, to Graver Tank & Mfg. Corp., East Chicago, Ind.

750 tons, plates and shapes, five coal barges for Costanzo Transportation Co., Wheeling, W. Va., to American Bridge Co., Pittsburgh.

700 tons, steel piling, addition to Bankers' Trust building, Wall and Nassau streets, New York, to Carnegie Steel Co., through Foundation Co.

400 tons, sheet piling, bridge, department of agriculture, Rio Puerco, Ariz., to Jones & Laughlin Steel Corp.; W. E. Callahan Construction Co., Dallas, Tex., general contractor.

360 tons, station tanks for Gulf Refining Co., to Reeves Bros. Co., Alliance, O.

200 tons, 16-inch welded steel pipe, Santa Barbara, Calif., to unnamed interest. General contract to F. B. Gridler, Pasadena, Calif.

100 tons, diesel oil tank, bureau of yards and docks, San Diego, Calif., to Chicago Bridge & Iron Works, Chicago.

Contracts Pending

8000 tons, plates, shapes and bars, mainly plates, 11 destroyers. Navy department, Washington, opens bids Oct. 1.

1500 tons, plates and shapes, mainly plates, cracking plant, Tidewater Oil Co., Bayonne, N. J., tanks and towers to be fabricated by Babcock & Wilcox Co., Barberton, O.; Walter E. Lummus Co., New York, contractor.

750 tons, welded steel pipe line, Tacoma, Wash. Steel Tank & Pipe Co., Portland, Oreg., low on steel pipe.

575 tons, 72 and 48-inch, connecting conduits, shaft 23, tunnel No. 1 and shaft 16A tunnel No. 2, Third avenue and Schermerhorn, Nevins and State streets, Brooklyn, N. Y.; bids Aug. 4, board of water supply, New York.

250 tons, steel sheet pile bulkhead, Columbia street, Erie basin, Brooklyn, department of docks; Allen N. Spooner & Son Co., low.

184 tons, 135 plates and 49 shapes, navy yard, Brooklyn, N. Y.; Joseph T. Ryerson & Son Inc. low on both items.

125 tons, 52-inch, water diversion tunnel, Metropolitan Water Supply commission, Boston; bids in.

125 tons, elevated tank, Valdosta, Ga.; bids July 29.

More Cars in Bad Order

Class I railroads June 15 had 172,805 freight cars in need of repairs or 7.8 per cent of the number on line, according to the American Railway Association.

This was an increase of 2640 cars over June 1.

Railroads

Norfolk & Western Places Steel for Hoppers—Inquiry Out for 500 Underframes

TRACK MATERIAL PRICES, PAGE 49

New York—Pennsylvania railroad will place 3000 new steel containers into service, doubling the number of points on its lines receiving container car service. New car buying and inquiry for eastern railroads is light. One carrier is in the market for six interurban passenger cars.

Norfolk & Western has placed 1700 tons of plates, shapes and bars with the Carnegie Steel Co. for 450 hopper car bodies to be built in its own shops. For parts for these cars, 500 tons of steel have been placed with the American Car & Foundry Co. and Virginia Bridge & Iron Co. has taken 200 tons of shapes. Norfolk & Western also has placed 10,000 kegs of spikes and a large quantity of tie plates and track bolts.

Pittsburgh—Aside from the award to a local steel mill of bars, plates and shapes for the Norfolk & Western's 450 hoppers and award of fastenings to accompany its recent 20,000-ton rail order, new railroad business is light with little inquiry appearing. Specifications against old orders are fairly steady but light.

Chicago—While some of the roads apparently will order out only about half the rails under contract this season, releases are continuing at about 2000 tons weekly, enabling the district's rail mills to operate about 25 per cent. Rail buying this year is estimated at less than 60 per cent of normal. Track fastening releases still average 2000 to 2500 tons weekly.

Northern Pacific railroad is inquiring for 500 underframes and 500 superstructure units for box cars. Union Tank Car Co. has let the tank steel for 100 tank cars.

Locomotives Placed

Chicago, Burlington & Quincy, one gasoline-electric switching locomotive, to Whitcomb Locomotive Co., Rochelle, Ill.

Car Orders Pending

Northern Pacific, 500 steel underframes and 500 superstructure units for 40-ton single sheathed box cars.

Fonda, Johnstown & Gloversville, six interurban passenger cars.

Revise Structural Practice

Washington—Revised trade practice rules of structural steel fabricators which have been accepted by the industry following a number of changes in wording suggested by the federal trade commission, have been made public. Commission declined to approve one of the group 1 and four of the group 2 rules formerly adopted.

Sheet Bar Demand More Active at Pittsburgh

Semifinished Prices, Page 58

Pittsburgh—Sheet bars have been slightly more active recently as a result of the improvement experienced by sheetmakers in business in the closing out of old contracts. New orders for sheet bars usually have been placed at $29. Billets continue slow with the market unchanged at $29. Forging billets continue $35 to $36, and wire rods $35.

Philadelphia—Billet sales are small, and prices hold at $29, Pittsburgh, for rerollers and $34 for forging quality.

Youngstown, O.—The movement of billets and sheet bars to district consuming mills has reached minimum, apparently, with sheet and strip mills losing headway. This tapering off in consuming mill activities has now extended to tin plate mills. Billets, sheet bars and slabs hold at $29, Youngstown and Cleveland.

Cleveland—The market for semifinished steel is quiet, sheet bars, billets and slabs bringing $29, base, Cleveland and Youngstown, O., for small lots. The leading merchant producer continues to operate five of its 14 open hearths.

Chicago—Only moderate stocks of semifinished steel have accumulated thus far. Prices are nominal at $30, Chicago, for billets and blooms, 4 x 4-inch base, and $35 to $36, Chicago, for forging billets. Sheet bars are unchanged at $30.

Cable Award Divided

Dayton, O.—Three cable makers divided contracts on 33,000 feet of cable for Wright Field, a wide variety of sizes being included. Bishop Wire & Cable Co., New York, booked 17,000 feet on a total bid of $2681.50; American Steel & Wire Co., Chicago, 15,000 feet, $3177.25, and General Electric Co., 1000 feet.

Structural Shapes

Golden Gate Award Deferred Six Months—58,700-Ton New Orleans Bridge Revived — Court Building to Take 9000 Tons—Pending List Heavy, 111,806 Tons

STRUCTURAL SHAPE PRICES, PAGE 49

New York—Bids go in Aug. 3 on the last section on route 25, connecting link, northern New Jersey, 1900 tons. Steel erectors on this route, the largest structural undertaking now under way in this district, are meeting with considerable labor disturbance. Fresh inquiry is light and lettings are also down. The Walkill prison has been placed.

Shape prices are now 1.60c, Pittsburgh, the 1.65c price being eliminated. Efforts will be made to hold material at the new minimum.

Lettings in June totaled 15,236 tons, according to the Structural Steel Board of Trade, New York. This compares with 14,832 tons in May and 49,833 tons in June, 1930. Bridge and engineering work is not included in the above figures.

Worcester, Mass.—Eastern Bridge & Structural Co. has closed on 350 tons for St. Rose college, Albany, N. Y. About 500 tons are pending for Worcester art museum, contract for which went to E. J. Cross & Co.

Boston—Less than 700 tons of structural were awarded in this district in the past week. Largest award was for the city printing plant calling for 350 tons.

Philadelphia—The figure of 1.70c, base, eastern mill, continues on plain standard shapes. This market is the firmest in some time. New business is at the same rate as last week with shape mills operating close to 38 per cent finishing capacity.

Cleveland—For the market generally, plain structural material is a flat 1.60c, base Pittsburgh, the 1.65c price having disappeared. Awards and fresh pending work are extremely slow with the exception of Wabash railroad elimination work at Toledo, 676 tons, and 825 tons in a bridge for the Nickel Plate at Toledo, both placed. Contractor has been named on the Cleveland juvenile courts group.

Chicago—Less than 6000 tons of structural steel has been awarded, virtually all public work, but about 25,000 tons has become active or will be out for figures shortly. Bids will be taken late this month on 10,000 tons of bridge and highway work for the Louisiana highway commission. An inquiry is expected shortly for 2000 tons, approaches to the Cedar street bridge, Peoria, Ill., and it is expected about 7500 tons may be active soon for power line transmission towers from Peoria to Chicago. A 2000-ton school job has been let in Chicago.

San Francisco — Award of the 106,000 tons of steel for the Golden Gate bridge will be deferred for perhaps six months. Low bidders have been asked to enter into an agreement to stand by their proffers for at least six months due to uncertainty in financing the bonds necessary for construction. Therefore, STEEL's structural total for the year to date properly does not include premature award of this tonnage.

Contracts Placed

2500 tons, state highway project No. 1801, Louisiana, to Virginia Bridge & Iron Co., Roanoke, Va., through List & Weatherly Construction Co., Kansas City.

2500 tons, coal breaker, St. Nicholas, Pa., for Reading Coal & Iron Co., to Lehigh Structural Steel Co., Allentown, Pa.

2225 tons, office building, Washington, for Standard Oil Co., to American Bridge Co., Pittsburgh.

2000 tons, Wells junior high school, Chicago, to Eggers-Schillo Co., Chicago.

1200 tons, Oakman street grade crossing elimination, Dearborn, Mich., for Pere Marquette railroad, to unstated fabricator.

825 tons, bridge, Toledo, O., for Nickel Plate railroad, to American Bridge Co., Pittsburgh.

800 tons, state prison, Walkill, N. Y., to Ingalls Iron Works, Vernona, Pa.; Wark Construction Co., Philadelphia, contractor.

750 tons, bridges for Milwaukee Electric Railway & Light Co., interurban extension, divided among Worden-Allen Co., Wisconsin Bridge & Iron So., Milwaukee Bridge Co., Lakeside Bridge & Steel Co., Milwaukee Structural Steel Co. and C. Hennecke Co., all of Milwaukee.

700 tons, train shed, Dallas, Tex., for Texas & Pacific railroad, to Mosher Steel & Machinery Co., Dallas.

676 tons, grade separation work, Toledo, O., for Wabash railroad, allocated as follows: 314 tons, Glendale avenue separation, to American Bridge Co., Pittsburgh; 102 tons, Woodsdale avenue separation, to American Bridge Co.; 260 tons, Detroit avenue separation, to McClintic-Marshall Corp., Bethlehem, Pa.

500 tons, bridge, Galesburg, Ill., for Chicago, Burlington & Quincy, to McClintic-Marshall Corp., Bethlehem, Pa.

500 tons, addition to Canada Cement Co. plant, Port Colborne, Ont., to Hamilton Bridge Co., Hamilton, Ont.

500 tons, refrigeration division, General Electric Co., Erie, Pa., to Austin Co., Cleveland; steel to be electrically welded.

450 tons, girder bridges for Chicago, Burlington & Quincy railroad, St. Louis, to American Bridge Co., Pittsburgh.

405 tons, divinity school, Yale university, New Haven, Conn., to American Bridge Co., Pittsburgh.

400 tons, sheet steel piling, bridge over Rio Puerco creek, Phoenix, Ariz., to Jones & Laughlin Steel Corp., Pittsburgh.

350 tons, St. Rose college, Albany, N. Y., to Eastern Bridge & Structural Co., Worcester, Mass.

336 tons, bridge, Twenty-third and Twenty-fourth street, Detroit, for Michigan Central railroad, to American Bridge Co., Pittsburgh.

340 tons, printing plant for City of Boston, to Boston Structural Steel Co., Cambridge, Mass.

250 tons, 3-story factory addition, New Brunswick, N. J., to Cassera Construction Co., New Jersey.

250 tons, petrified forest structure, Mexico, to Virginia Bridge & Iron Co., Roanoke, Va.

250 tons, building for Chrysler Corp., Detroit, to Whitehead & Kales Co., Detroit.

250 tons, highway bridges, New York state, to American Bridge Co., Pittsburgh.

250 tons, viaduct, Seaboard Air Line railroad, Floyd, Ga., to Ingalls Iron Works Co., Birmingham, Ala.

240 tons, bridge, Cherokee, Iowa, to Pittsburgh-Des Moines Steel Co., Des Moines, Iowa.

240 tons, six plate girders for Southern Pacific Co., San Francisco, to Virginia Bridge & Iron Co., Roanoke, Va.

235 tons, bridge, department of agriculture, Rio Puerco, Ariz., to Virginia Bridge & Iron Co., Birmingham, Ala.; W. E. Callahan Construction Co., Dallas, Tex., general contractor, 50 tons bars, pending.

230 tons, intermediate school, Dorchester, Mass., to Boston Structural Steel Co., Cambridge, Mass.

225 tons, building for Sisters of Charity, Kingstown, Ont., to Disher Steel Construction Co., Toronto, Ont.

225 tons, highway bridge, Apache county, Ariz., to Virginia Bridge & Iron Co., Roanoke, Va.

215 tons, highway bridge, Adel, Iowa, to Des Moines Steel Co., Des Moines, Iowa.

210 tons, bridge, Pacific coast, for Southern Pacific railroad, to Virginia Bridge & Iron Co., Roanoke, Va.

207 tons, St. Bernard school, White Plains, N. Y., to George J. Schnatz Iron Works, Bronx, N. Y.

200 tons, shapes for 450 hopper cars for Norfolk & Western to be built in carrier's own shops, to Virginia Bridge & Iron Co., Roanoke, Va.

200 tons, bridge, West Vienna, Ill., to Clinton Bridge Works, Clinton, Iowa.

Awards Compared

	Tons
Awards this week	**24,647**
Awards last week	**23,000**
Awards two weeks ago	**32,108**
Awards this week in 1930	**39,322**
Av. weekly awards, 1930	**35,242**
Av. weekly awards, 1931	**35,852**
Av. weekly awards, June	**38,076**
Total awards to date, 1930	**1,047,792**
Total awards to date, 1931	**1,111,401**

200 tons, grade separation, Firestone and Washington boulevards, Los Angeles, to Pacific Iron & Steel Co., Los Angeles.
165 tons, veteran's hospital, Albuquerque, N. Mex., to Darbyshire, Harvie Co., El Paso, Tex.
160 tons, bulk storage plant, Standard Oil Co., Hackensack, N. J., to J. G. Smith Iron Works, Passaic, N. J.; Enstice Bros., Newark, N. J., contractors.
160 tons, school No. 107, Mt. Vernon, N. Y., to Levine Iron Works, Yonkers, N. Y.
150 tons, highway bridge, New York state, to American Bridge Co., Pittsburgh.
150 tons, addition to Morse street school, Toronto, Ont., to John T. Hepburn Ltd., Toronto.
150 tons, warehouse for Machinery Mart, Seattle, to Isaacson Iron Works, Seattle.
143 tons, highway girder bridge, Luzerne county, Pa., to McClintic-Marshall Corp., Bethlehem, Pa.
140 tons, county tuberculosis hospital, Worcester, Mass., to McClintic-Marshall Corp., Bethlehem, Pa.
140 tons, grain warehouse, York, Pa., to Dietrich Bros., Baltimore.
120 tons, sheet steel piling for Grounes, Santa Barbara, Calif., to Pacific Coast Steel Co., San Francisco.
115 tons, building, Superior Paper Co., Pittsburgh, to Fort Pitt Bridge Works, Pittsburgh.
110 tons, paper mill, York, Pa., to Shoemaker Bridge Co., Pottstown, Pa.
110 tons, stage alteration, Marathon street, Los Angeles, to Consolidated Steel Corp., Los Angeles.
100 tons, or more, school, Lawrence Park, Pa., to Erie Steel Construction Co., Erie, Pa.; Continental Construction Co., contractor.
100 tons, shapes and bars, bridge, Clear creek, near Collins, N. Y., to Lackawanna Steel Co., Buffalo; A. K. Van Ingen, general contractor.
100 tons, bridge, Birmingham, Ala., Birmingham Southern railroad, to Virginia Bridge & Iron Co., Roanoke, Va.
100 tons, bridges, Harrisburg, Pa., for Reading Co., to McClintic-Marshall Corp., Bethlehem, Pa.
100 tons, warehouse for Geo. R. Borrmann Steel Co., Oakland, Calif., to Pacific Coast Engineering Co., Oakland.
100 tons, apartment, Gough and Pacific streets, San Francisco, to Judson-Pacific Co., San Francisco.
100 tons or more, 3-story school, Catholic Institute for Blind, Westchester county, N. Y., to Douglas Iron Works; W. A. Berbusse Jr., Inc., contractor.
100 tons, barracks, Lakehurst, N. J., to Morris, Wheeler & Co., Philadelphia.
100 tons, nurses' home, Waverly, Mass., to A. O. Wilson Structural Co., Cambridge, Mass.
100 tons, bridgework, Chicago, St. Paul & Pacific railroad, to Wisconsin Bridge & Iron Co., North Milwaukee, Wis.

Contracts Pending

58,700 tons, bridge, Mississippi river above New Orleans, Public Belt railroad commission, Frank H. Joubert, secretary, Municipal building, New Orleans; bids revived. Work also includes 1250 tons heat-treated eye bars, 458,000 linear feet steel reinforcing trusses, 537,500 square feet mattress protection, 5000 steel driving shoes for piles. Four contracts; 3, substructure main bridge; 4, superstructure main bridge; 5, substructure approaches; 6, superstructure approaches. Noted in STEEL, May 21, as bids delayed.
12,500 tons, addition, Bankers Trust building, Wall street, New York; bids in, about to be closed.
9000 tons, building for the Supreme Court, Washington.
8095 tons, bridge projects, Louisiana highway commission; bids Aug. 25. Two major projects in letting are bridges across the Atchafalaya river near Lebeau, La., and across Berwin bay near Morgan City, La. Work includes 2962 tons silicon structural steel and 5133 tons, carbon structurals.
8000 tons, dirigible base, Sunnyvale, Calif.; bids about Aug. 1.
7500 tons, power line transmission towers between Peoria, Ill., and Chicago.
4100 tons, South Tenth street bridge, Pittsburgh; American Bridge Co., Pittsburgh, low.
3500 tons, postoffice and federal building, Seattle, previously reported as 2500 tons.
2000 tons, armory, Jersey City, N. J.; Taylor-Fichter Steel Construction Co., New York, low.
1900 tons, bridges, Essex county, N. J., for New Jersey state highway commission; A. Lee Grover, chief clerk, Trenton, N. J.; bids open Aug. 3.
1900 tons, viaduct with ramp connections, route 25, connecting link, sections 8 and 8A, Essex county, New Jersey; bids Aug. 3, New Jersey state highway commission, Trenton, N. J.; A. Lee Grover, chief clerk.
1300 tons, grade crossing, First and Glendale streets, Los Angeles; bids about Aug. 1.
1100 tons, warehouse, Broadway pier, San Diego, Calif.; bids opened.
950 tons, Juvenile courts buildings, Cleveland; J. L. Hunting Co., Cleveland, contractor.
850 tons, hospital, Middletown, N. Y.; Mark Construction Co., contractor.

(*Concluded on Page* 54)

Concrete Bars

Price Stabilizing Moves Seen —2600-Ton St. Louis Warehouse Swells Awards to Highest for Three Weeks —Shipments Heavy, Inquiry Light

REINFORCING BAR PRICES, PAGE 49

New York—Contractors holding highway and bridge contracts in northern New Jersey are slow to close because of labor troubles delaying some projects. Fresh inquiry is light. The parcel post building and inland freight terminal will take large tonnages of building mesh. Prices on small lots are firming at 1.93c, New York, but on attractive business shading is noted. Efforts are being made to establish the market at the above figures.

Boston—Only business done during the week was in a number of odd tonnages that aggregated about 200 tons. Prices are showing no change as yet, despite the fact that it is understood that an effort is being made to stabilize bar prices.

Chicago—With heavy shipments continuing on public works projects, the market is in a satisfactory position despite a slight slump in fresh inquiries. Rail steel bars for road, bridge and culvert work are holding at 1.65c for larger projects. General contract has been awarded for the Marshall Field Estate building, about 2500 tons.

Buffalo—A marked stiffening in quotations is being effected here. Principal pending inquiry is for more than 1500 tons for state highway work.

Pittsburgh—Specifications against orders are well maintained but new business is lighter. The market on mill lengths is 1.60c.

Awards Compared

	Tons
Awards this week	**6,957**
Awards last week	**5,464**
Awards two weeks ago	**5,135**
Awards this week in 1930	**9,873**
Av. weekly awards, 1930	**6,990**
Av. weekly awards, 1931	**6,757**
Av. weekly awards, June	**6,506**
Total awards to date, 1930	**210,212**
Total awards to date, 1931	**209,462**

Contracts Placed

2600 tons, Illinois Terminal warehouse, St. Louis, evenly divided between Laclede Steel Co. and Missouri Rolling Mill Co., both of St. Louis.
1000 tons, state highway project No. 1801, Louisiana, to Sheffield Steel Corp., Kansas City, Mo., division, American Rolling Mill Co., Middletown, O.
750 tons, building for Western Electric Co., Chicago, to American System of Reinforcing, Chicago.
500 tons, federal prison, Anthony, N. Mex., to unnamed interest; general contract to Robert E. McKee, El Paso, Tex.
500 tons, veteran's hospital, Albuquerque, N. Mex., to unnamed interest; general contract to Murch Bros.
286 tons, wharf, shed and walls, navigation district, Harrison county, Texas, to Texas Contractors' Supply Co., Waco, Tex.; J. S. Harrison Construction Co., Waco, contractor.
240 tons, barracks, Lakehurst, N. J., to American Steel Engineering Co., Philadelphia, through McCormick-Lenham Co.
150 tons, telephone building, Charleston, W. Va., to West Virginia Rail

Co., Huntington, W. Va.; Consolidated Engineering Inc., Baltimore, contractor.

150 tons, highway, Sussex county, N. J., to Kalman Steel Co., Chicago.

126 tons, building, Methodist board for prohibition, temperance and public morals, Washington, to Capitol Fireproof Products Corp., Washington; Charles H. Tompkins Co., contractor.

100 tons, city hall, Hammond, Ind., to W. J. Holliday & Co., Hammond, Ind.

100 tons, highway, route 31, section 9, Andover to Newton, N. J., to Faitoute Iron & Steel Co., Newark, N. J.; S. B. Martin, Sussex, N. J., contractor.

100 tons, hospital, Sheboygan, Wis., to Calumet Steel Co., Chicago.

100 tons, warehouse for Hilo Varnish Co., Brooklyn, N. Y., to Jones & Laughlin Steel Corp., Pittsburgh.

100 tons, bulk storage plant, Hackensack, N. J., for Standard Oil Co., to Truscon Steel Co., Youngstown, O.

100 tons, wharf, berth 144-146, San Pedro, Calif., to unnamed interest.

Contracts Pending

2500 tons, caissons and superstructure for Marshall Field Estate building, previously reported as 5000 tons; general contract to George A. Fuller Construction Co., Chicago.

1325 tons, sewage plant, Elizabeth, N. J.

1150 tons, newspaper plant for *Times-Star* Publishing Co., Cincinnati.

843 tons, bridgework, St. Mary parish, Louisiana highway commission; bids Aug. 25.

592 tons, bridgework, Pointe Coupee and St. Landry parishes, Louisiana highway commission; bids Aug. 25.

400 tons, city hall, Beverly Hills, Calif.; bids opened.

325 tons, Pennsylania railroad station, Thirty-second street, Philadelphia.

250 tons, mole for Fish harbor extension, Los Angeles; bids Aug. 5.

208 tons, bridge, Bixby creek, Monterey county, Calif.; bids Aug. 5.

140 tons, five bridges, Tulare county, Calif.; bids Aug. 5.

125 tons, hospital, Sixth and St. Louis streets, Los Angeles; bids being taken.

110 tons, upper Alameda creek dam for San Francisco; bids opened.

100 tons, bridge over south fork, Eel river, Humboldt county, Calif.; bids Aug. 5.

100 tons, state highway bridge, Hamburg, N. Y.; bids Aug. 4.

Unstated tonnage, 10,000 sheets, steel fabric reinforcing wire, highway department, Washington, D. C.

Structural Shapes Pending

(*Concluded from Page* 53)

810 tons, three bridges for Pennsylvania railroad; McClintic-Marshall Corp., Bethlehem, Pa., low. Bridges located as follows: 200 tons, Ashland avenue, Chicago; 410 tons, Pittsburgh; 210 tons, Lancaster, Pa.

800 tons, schools No. 236 and 248, Brooklyn, N. Y.

700 tons, plant building for Jefferson Electric Co., Chicago, at Bellwood, Ill.; Olsen & Urbain, Chicago, architects.

600 tons, high school, Milwaukee, Wis.

520 tons, health center, San Francisco; Golden Gate Iron Works, San Francisco, low.

500 tons, for National Dock & Terminal Co., Camden, N. J.; Cramp & Co., contractor.

500 tons, state bridge, Bucksport, Me.

500 tons, high school, Auburn, N. Y.

500 tons, apartment for John Alden, Los Angeles; Consolidated Steel Corp., Los Angeles, low.

425 tons, bridge over Spanish creek, Plumas county, Calif.; bids Aug. 5.

400 tons, school, Freeport, N. Y.

400 tons, highway bridge, Hysham, Mont.

350 tons, dormitory, state hospital, Syracuse, N. Y.

350 tons, postoffice, Helena, Mont.

300 tons, power house, King's county hospital, Brooklyn, N. Y.

300 tons, highway bridge, Readstown, Wis.; Peppard & Fulton Co., Minneapolis, low on general contract.

250 tons, railroad bridge, Comstock, N. Y.

250 tons, diversion tunnel for metropolitan water commission, Belchertown, Mass.

250 tons, highway bridges, New Jersey.

220 tons, bridge over Bixley creek, Monterey county, Calif.; bids Aug. 5.

200 tons, telephone building, Newark, N. J.

200 tons, two state bridges, Foxboro, Mass.

175 tons, theatre, Stockton, Calif.; bids opened.

161 tons, bridge, La Plata county, Colo.; bids opened.

150 tons, Shawmut avenue bridge, Boston.

100 tons, market street subway concourse, Philadelphia.

Unstated tonnage, passenger terminal, Houston, Tex., for Southern Pacific Co.; project expected to cost $7,000,000; plans completed.

Unstated tonnage, Pennsylvania railroad addition; structural bids Aug. 4.

Is Low on Gate Valves

New York.—Chapman Valve Mfg. Co., Springfield, Mass., is low on gate valves for the navy department, for Brooklyn and Philadelphia, on a bid of $9496. On lighting and power cable for New York harbor, Bishop Wire & Cable Corp. is low on 3500 feet on a bid of 2.9c, while on 1700 feet, heavier, Crescent Insulated Wire & Cable Co., Trenton, N. J., is low with 27.368c. General Cable Corp. is low on 34,000 feet of telephone wire for New York with a bid of 1.145c.

Plan To Cut Zinc Output

Washington — The international zinc cartel meeting at Ostend, Belgium, has agreed to cut production 45 per cent from normal levels, effective from Aug. 1 to Dec. 31, 1932, then automatically renewable annually unless denounced by a three months' notice, according to a cabled dispach deceived in the commerce department from R. C. Miller, commercial attache at Brussels.

The percentage reduction may be modified with price improvement, the agreement indicates. The countries signing the agreement are Belgium, France, Germany, Poland, England, Norway, Czechoslovakia, Italy, Australia, Canada and Mexico.

Barnes Mfg. Co., Mansfield, O., has rented a 1-story building with 16,000 square feet of floor space at Pershing road and Wallace street, Chicago, as a warehouse and distribution point for plumbing and heating supplies.

Pipe

Line Inquiries Absent—Cast at New York Down $1 to $2 Per Ton On Four and Six Inch

PIPE PRICES, PAGE 65

New York—About 3500 tons of cast pipe for the Wards Island disposal plant has been placed. Prices are easy, showing no strength on attractive business.

Postponed bids on approximately 10,000 tons of 18-inch seamless steel pipe for West side elevated highway foundations go in this week.

National Tube Co. has been awarded 1000 tons of wrought steel pipe and 10,000 to 20,000 boiler tubes for the Delaware, Lackawanna & Western. Quantities named are nominal, however, specifications to be made for all or any part before the end of the year.

Boston—Warren Foundry & Pipe Co. closed this week on substantial tonnages for several municipalities, completing work already under way. United States Pipe & Foundry Co. took 1000 feet of 6-inch and 2200 feet of 10-inch from Fitchburg, Mass., for municipal work.

Pittsburgh—Demand for a standard pipe and oil country goods remain at the dull rate of the past 30 to 60 days. The outlook in line pipe is rather dull, prospective business consisting mostly of small miscellaneous lines. Awarding of 15,000 tons for a line for the Atlantic Refining Co. in east Texas is expected to complete most of the larger construction in that district.

Chicago—Contractors are expected to purchase about 1000 tons of miscellaneous pressure pipe and fittings for the Calumet sewage disposal works for the Chicago sanitary district. It is understood Detroit will postpone much of the work contemplated for this season. Six to

24-inch sizes are quoted nominally at $42 to $44, Chicago.

Cast Pipe Placed

3500 tons, various sizes, mostly large, sewage disposal plant, Wards Island, New York, to United States Pipe & Foundry Co., East Burlington, N. J.; W. H. Gahagan Co., Brooklyn, N. Y., contractor.

968 tons, 2 to 12-inch class B, Boulder City, Nev., to unnamed interest.

483 tons, 2-inch, Los Angeles, to unnamed interest.

750 tons, 20-inch class B and C, Seattle, to National Cast Iron Pipe Co., Birmingham, Ala.

180 tons, 4 to 10-inch, for Fond du Lac, Wis., to R. D. Wood & Co., Florence, N. J.

138 tons, two improvement jobs, Seattle, 8 and 12-inch, divided between United States Pipe & Foundry Co., East Burlington, N. J., and Pacific Waterworks Supply Co., Seattle.

105 tons, 2-inch, Long Beach, Calif., to unnamed interest.

100 tons, 6 and 8-inch, Nashua, N. H., to R. D. Wood & Co., Florence, N. J.

3200 feet, including 2200 feet 10-inch and 1000 feet 6-inch, Fitchburg, Mass., to United States Pipe & Foundry Co., East Burlington, N. J.

Steel Pipe Placed

15,000 tons, 180 miles, 10¾-inch seamless pipe, line for Atlantic Refining Co., East Texas, to National Tube Co., Pittsburgh.

1000 tons, wrought steel pipe, and 10,000 to 20,000 boiler tubes, Delaware, Lackawanna & Western railroad, to National Tube Co., Pittsburgh. All or any part of material may be specified up to Dec. 31.

460 tons, Utica, N. Y., pipe line, for Buffalo, Niagara & Eastern Power Co., to Farrar & Tretts Inc., Buffalo.

Cast Pipe Pending

1100 tons, 6 to 12-inch class C, waterworks for village of Fox Point, Milwaukee P. O.; 434 tons 6-inch, 410 tons 8-inch and 247 tons 12-inch, 25 tons special castings; 96 hydrants; new bids close July 31. Original bids rejected in June.

324 tons, 4 to 12-inch, class B, improvement of Florence avenue, Huntington Park, Calif.; bids July 27.

127 tons, 4 to 10-inch class B, for sewer system, Artesia street, Los Angeles; bids Aug. 3.

Steel Pipe Pending

160,000 to 180,000 tons, gasoline pipe line from Bagdad to Mediterranean sea, Iraq; negotiations completed according to Earl C. Taylor, Paris, United States assistant trade commissioner. Noted as pending first, STEEL, Jan. 22, 1931.

5000 tons, 50 miles, 12-inch pipe for gas line in northern New York for Iroquois Gas Co., subsidiary of Associated Gas & Electric Co.

2800 linear feet, structural steel railing, viaduct with ramp connections, route 25, connecting link, sections 8 and 8A, Essex county, New Jersey; bids Aug. 3, New Jersey state highway commission, Trenton, N. J.; A. Lee Grover, chief clerk.

2250 feet galvanized pipe, 250 feet black pipe, Edgewater arsenal, Md.; bids July 24.

1650 feet, 12-inch shore pipe, United States engineer, Jacksonville, Fla.; bids July 24.

Wire

Advance of $2 Per Ton Is Reaffirmation of Price on Nails—Buying Seasonally Slack

WIRE PRICES, PAGE 49

Chicago — While merchant wire shipments now are not far below June, July apparently will show a marked falling off from last month and from July, 1930. Contracting late in June resulted in fair bookings, although little forward business has been closed this month. Spot and contract orders are based on 2.25c, Chicago or western mills, for plain wire to jobbers, and $1.85 for wire nails. Gavanized wire remains at 2.85c to 2.95c. A fair amount of common wire business is expected next month, despite low farm prices.

Worcester, Mass. — Prospects for rods and wire for building purposes stand out principally in a dull market. Summer schedules gradually slowing to new low levels continue the rule and third quarter contracting lags. There is little demand for nails.

New York—Nail and wire buying continues light. Firmer prices on nails and wire products appear more in evidence in the West than in this market, where $1.80, Pittsburgh, continues on current nail business, although $1.90 is being reaffirmed. Plain bright wire is quoted 2.20c, Pittsburgh.

Pittsburgh—Wire producers have followed the lead of an independent interest in announcing prices on jobbing products that represent an advance of $2 a ton over the recently prevailing market. Plain wire is unchanged at 2.20c and spring wire at 3.20c. Wire nails are quoted $1.90 to jobbers with usual differentials prevailing over other products, such as fence wire and staples. Prices to the merchant trade carry the usual 10-cent differential above this figure. The recent market on wire nails had been $1.80 to jobbers at which level buyers have been protected by contract for the current quarter. Incoming business continues quiet in all products with little change noted since the first of the month.

Cleveland—Mills have issued announcements of $2 a ton advance in nails, effective at once, to $1.90 a keg for jobbing interests and $2 to the regular trade. This is more a reaffirmative then an outright advance. Bright plain wire and spring wire are unaffected and are moving slowly at 2.20c and 3.20c, base Pittsburgh, respectively.

United States Chain & Forging Co., Pittsburgh, manufacturer of various types of chain and forgings, has changed its name to the McKay Co.

Bolts, Nuts, Rivets Slow, But Close to June Rate

Bolts, Nuts, Rivets Prices, Page 49

Pittsburgh — Specifications for bolts, nuts and rivets have improved slightly although business still is slow. Orders so far this month compare favorably with the June volume. The new price of 73 and 10 off for bolts and nuts is well observed and little shading is noted in the rivet market, with large rivets continuing 2.75c, Pittsburgh.

New York—Sales of bolts, nuts and rivets are at a low point, the lowest since 1914 with most producers. Operations are between 30 to 35 per cent with the market bare of immediate inquiry. Prices are unchanged at 73 and 10 off list for bolts and nuts. Rivets are firm at 2.75c, Pittsburgh, but volume is light.

Chicago—Prices of structural and small rivets are nominal, the former being quoted at 2.85c, Chicago, for carloads. Production remains at about 30 to 35 per cent, and specifications are far below a year ago. More hope is seen for autumn demand from several of the larger implement works.

Iron Ore Stocks Heavy, Despite Low Shipments

Iron Ore Prices, Page 58

Cleveland — Despite abnormally low shipments of Lake Superior iron ore thus far this year, stocks at lower lake docks and furnaces July 1 were 3,000,000 tons in excess of those on hand at this date last year, according to the Lake Superior Iron Ore association's current report, which follows:

	Tons
Ore consumed in May	2,674,758
Ore consumed in June	2,102,998
Decrease in June	571,760
Ore consumed in June, 1930	4,288,471
Ore at furnaces July 1, 1931	23,556,233
Ore on Lake Erie docks July 1, 1931	5,156,692
Total at furnaces and Lake Erie docks July 1, 1931	28,712,925
Total July 1, 1930	25,699,749

Strip

Better Volume Maintained Than Expected—Production Is Less—Prices Hold Fairly Well

STRIP PRICES, PAGE 49

Pittsburgh—Strip business is fairly steady and, although at a low rate, is slightly better maintained than had been anticipated. Fair activity on the part of some automotive interests is offsetting declining requirements of others but demand from miscellaneous consumers lacks improvement. Some specifications are being received against higher priced contracts for hot strip and the market is fairly well maintained at 1.55c and 1.65c. Cold-rolled strip usually is 2.15c. Mill operations are slightly lower at 20 to 25 per cent for hot mills and 15 to 20 per cent for cold strip.

Worcester, Mass.—Cold-rolled strip is quiet at 2.30c, Worcester, but stamping is holding up well, running far ahead.

New York—Cold-rolled strip is 2.15c, Pittsburgh, although 2.25c is noted on small orders. Most business, which is light, is at the former figure. Wide hot strip is unchanged at 1.55c, Pittsburgh, with narrow, 1.65c.

Cleveland—Forward business of any size is virtually absent in both hot and cold-rolled strip. Sellers continue to canvass buyers of more than carload lots but find them not inclined to purchase. Here and there a carlot or two of hot-rolled is moving and in that respect the new prices of 1.55c and 1.65c for wide and narrow hot have been tested, but volume commitments have been absent since the newly announced levels. No volume orders are pending from any important users.

Operations at Bare 30 Per Cent, Off Three Points

Youngstown, O.—Steel operations declined this week to 34 per cent of capacity, down four points. Reduced melting operations in several open-hearth departments, lower pipe and tinplate mill production and weakened activity in other lines accounted for the decline.

A 5 point cut in production at Republic Steel Corp.'s plants, in the district brought that company's average to 35 per cent while Youngstown Sheet & Tube Co. operations have worked down to a 30 to 35 per cent range. Carnegie Steel Co. activity is near 35 and Sharon Steel Hoop Co. operations are at 34, against 50 per cent a week ago.

Philadelphia — Ingot operating rate in eastern mills is unchanged this week at 33-34 per cent capacity. A large mill in this section is fractionally down from last week's 35 to 34-35 per cent this week.

Buffalo—Operations show a five-point gain this week, having advanced to 43 per cent. There are now 16 open hearths in production. Liberal receipt of shipping instructions is responsible for the gain.

Pittsburgh—Ingot output still is declining at some points, currently being only slightly above 30 per cent or down a point and a half from last week. Blast furnace schedules are unchanged at 14 active of 54 steelworks stacks. Sheet output is up slightly at 35 to 40 per cent with tin plate easily at barely 65. Strip is lower at 20 to 25; pipe continuing 35 to 40.

	Per Cent
Operations this week	30
Operations last week	33
Operations two weeks ago	33-34
Operations this week, 1930	60
High for 1931, (March 19)	57
Low for 1931, (July 23)	30

Cleveland—Ingot operations are down eight points to 27 per cent of capacity this week with the retirement of three open-hearths from the active list. Only nine of the 34 furnaces in the district are pouring. This rate is the lowest to date for 1931. Finishing mill operations are spotty, one plant being entirely down.

Chicago — Ingot production is down one point this week to 29 per cent. Ten of the district's 36 steelworks blast furnaces remain active, but one of these may go down late this week. Plate mill operations have gone slightly below 40 per cent, while other finishing mills remain unchanged. Sheet mills are at about 50.

Birmingham, Ala.—Ingot production dropped five points this week to around 35 per cent of capacity with the shutdown of rail mill of Tennessee Coal, Iron & Railroad Co. Two open-hearth furnaces of Ensley Works remain in operation. Two blast furnaces have been withdrawn from activity, one banked and other blown out entirely.

Warehouse Sales Decline General Since May

Warehouse Prices, Page 65

New York—Movement of steel out of warehouse is lighter. On what little business is taken in sheets, new prices are holding with those who have placed new classifications in affect. Several of the larger distributors are still quoting sheets on the old basis.

Philadelphia—Black and galvanized sheets have been advanced and blue changed to conform to the new mill differential. Demand so far in July is 5 to 10 per cent below July of last year.

Buffalo—Warehouses report little change in demand. July business is fully up to June levels.

Pittsburgh—Demand has declined following steady buying early in the month. Prices are subject to occasional shading.

Cleveland—Despite price alterations in neighboring markets, local sheet quotations will not be adjusted to conform with the new classifications until September, jobbers state. Prices otherwise continue unchanged. It is generally conceded that the low point in demand is occurring at the present.

Detroit—Orders for steel from warehouse continue of small proportion. No noticeable trend is apparent as the volume holds to past weeks' levels. Prices are unchanged.

Cincinnati—Jobbers report slightly more activity in building materials. Tonnage this month will likely equal June.

Chicago—City sales have been dropping off, while orders from outlying territory show gains. A steady decline in warehouse bookings has occurred since May. Prices are unchanged.

St. Louis—Warehouse interests report somewhat more than the usual slowing down. Business since the holidays has not revived to the extent expected.

Chattanooga, Tenn. — Steel and iron bars have been cut $2 a ton from stock. Cold-finished steel, bands and No. 10 blue annealed have been reduced likewise.

» » » » » » MADE BY CONTINUOUS PROCESS

"Pioneers in Continuous Sheet Rolling"

PUNISHING PRESSES
hold no fear for *these sheets*

THUMP, THUMP, THUMP . . . huge toggle presses descend steadily and with punishing force on the waiting blanks. But these sheets form easily and surely under the battering charge . . . they are Armco steel sheets created expressly for the exacting requirements of automobile body fabrication.

From narrow strips to extremely wide sheets, Armco iron and steel are bringing substantial savings in fabrication to manufacturers everywhere. Yields to be consistently good require that special grades be made expressly to meet each individual need. And the finished product invariably reflects the wise choice of materials.

If you are confronted with a perplexing problem in stamping, drawing, or surface finishing, an experienced Armco Engineer can undoubtedly help you. His thorough knowledge of sheet metal and its applications can be used to help you exact the most profit from your sheet metal investment. Ask the office nearest you for this co-operative service.

ARMCO

THE AMERICAN ROLLING MILL COMPANY

Executive Offices: MIDDLETOWN, OHIO

Export: The Armco International Corporation

DISTRICT OFFICES: *Chicago · Cincinnati · Cleveland · Detroit New York · Philadelphia · Pittsburgh · St. Louis · San Francisco*

ARMCO
IRON AND STEEL
SHEETS EXCEPTIONAL QUALITY PLATES

Raw Material Prices

Pig Iron

Per Gross Ton

FOUNDRY, No. 2

Chicago furnace	$17.50
Pittsburgh, dist. fur.	17.50
Pittsburgh, delivered	18.13 to 18.63
Valley furnace	17.00
Cleveland fur., local del.	17.00
Philadelphia, delivered	17.26
Virginia, furnace	17.75
Granite City, Ill., fur.	17.50
Buffalo, fur., local del.	17.00
Buffalo, del. Boston	21.41 to 21.91
Buff., all-rail, Brooklyn	19.91 to 20.91
Buff., all-rail Newark	18.28 to 18.78
Ala., Bir. fur., local del.	12.00 to 13.00
Alabama, del. Chicago	17.01
Alabama, del. St. Louis	15.42
Alabama, del. Cincinnati	14.69 to 15.19
Ala., Phila., dock del.	16.25
Ala., Balt., dock del.	16.00
Alabama, New York dock	16.50
Ala., Boston dock del.	16.75
Tenn., Bir. base, local del.	13.00
Tennessee, del. Cinn.	14.69 to 15.19
Montreal, delivered	23.50
Toronto, delivered	22.10

FOUNDRY, NO. 2X

Buffalo, fur., local del.	17.50
Buff., all-rail, Brooklyn	20.91 to 21.41
Buffalo, all-rail Newark	18.78 to 19.28
Buffalo, del. Boston	21.91 to 22.41
Virginia furnace	18.25
Eastern, del. Phila.	17.76

FOUNDRY, NO. 1X

Buffalo fur., local del.	18.50
Eastern, del. Phila.	18.26

MALLEABLE

Valley furnace	17.00
Cleveland fur., local del.	17.00
Pittsburgh dist. fur.	17.50
Pittsburgh, delivered	18.13 to 18.63
Chicago, furnace	17.50
Buffalo fur., local del.	17.50
Eastern Penna., delivered	18.26 to 20.91
Granite City, Ill., fur.	17.50
Montreal, delivered	24.00
Toronto, delivered	22.60

BASIC

Pittsburgh, district fur.	16.00 to 16.50
Pittsburgh, delivered	16.63 to 17.63
Eastern Penn., del.	16.75
Buffalo fur., local del.	16.50 to 17.00
Montreal, delivered	20.50
Valley, furnace	17.00

BESSEMER

Valley furnace	17.00
Pittsburgh, delivered	18.13 to 18.63
Pittsburgh, furnace	17.50

LOW PHOS.

Valley fur., standard	27.00
Philadelphia, standard	23.76 to 26.79
Copper-bear., E. Pa. fur.	22.50 to 23.00

GRAY FORGE

Valley furnace	16.50
Pittsburgh district fur.	17.00
Pittsburgh, delivered	17.63 to 18.13

CHARCOAL

Lake Superior, del. Chi.	27.04

SILVERY

Jackson County, O., fur., in per cents 6—$21; 7—$21.50; 8—$22; 9—$22.50; 10—$23; 11—$24; 12—$25; 13—$27.

BESSEMER FERROSILICON

Jackson County, O., fur., in per cents 10—$25; 11—$26; 12—$27; 13—$29; 14—$31; 15—$26; 16—$35.

Coke

Prices Per Net Tons

Beehive Ovens

Connellsville furnace	$2.40 to 2.50
Connellsville foundry	3.25 to 4.50
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25

By-Product Foundry

Newark, N. J., del.	8.70 to 9.10
Chicago, ovens	7.50
New England, del.	10.50
St. Louis, del.	8.50
Birmingham, ovens	5.00
Indianapolis, del.	8.25
Ashland, Ky., ovens, Connell., basis	5.50
Portsmouth, O., ovens, Connell., basis	5.50
Buffalo, ovens	8.00 to 8.50
Detroit, ovens	8.00
Philadelphia, del.	8.75

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports

Old range bessemer	$4.80
Mesabi bessemer	4.65
Old range nonbessemer	4.65
Mesabi nonbessemer	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%, contract	10.00
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-10% manganese	10.00
North African low phosphorus	8.50
Swedish basic, 65%	9.00
Swedish low phos.	10.00
Spanish, North African basic, 50 to 60%	8.50 to 9.00
Newfoundland fdy., 55%	8.50
Tungsten, spot and future short ton unit, duty paid	$11.25 to $11.50
Chrome ore, 48% net ton c.i.f.	$21.50 to 22.00

Manganese Ore

Prices, not including duty, are cents per unit; cargo lots.

Caucasian, 52-55% (nom.)	26 to 28 cents
South African, 52%	26 to 28 cents
South African, 49-51%	25 to 26 cents
South African, 44-47%	24 cents
Indian, 48-50%	nom.
Brazilian, 46-48% (nom.)	22 cents

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	$40.00
Georgia, Alabama	40.00

Second Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	35.00
Georgia, Alabama	30.00 to 35.00

SILICA BRICK

Pennsylvania	40.00
Joliet, Ill., East Chicago, Ind.	49.00
Birmingham, Ala.	50.00

MAGNESITE BRICK

Per Net Ton

9 x 4½ x 2½	$65.00

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore bases	40.00
Domes, Chewelah, Wash., base	22.00

CHROME BRICK

Net ton, Chester, Pa., and Baltimore base, 9 x 4½ x 2½	45.00

Semifinished Steel

PRICES PER GROSS TON

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$29.00
Pittsburgh, bessemer	29.00
Youngstown	29.00
Cleveland	29.00
Philadelphia	34.30
Chicago	30.00
Forging, Chicago	35.00 to 36.00
Forging, Pittsburgh	35.00 to 36.00
Forging, Philadelphia	39.30

SHEET BARS

Pittsburgh	29.00
Youngstown	29.00
Cleveland	29.00
Chicago	30.00

SLABS

Pittsburgh	29.00
Youngstown	29.00
Cleveland	29.00

WIRE RODS

Pittsburgh, Cleveland	35.00
Chicago	36.00

SKELP

All grades, Pittsburgh	1.60c

Ferroalloys

(In dollars, except Ferrochrome)

*Ferromanganese, 78-82%, tidewater, duty paid	$85.00
*Ferromanganese, del. Pittsburgh	89.79
Spiegeleisen, 19-20%, domestic fur. spot†	30.00
Ferrosilicon, 50 per cent, freight all., c. l.	83.50
Do, less carload	88.50
Do, 75 per cent	130.00 to 150.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb., con., del.	11.00
Do, for spot delivery	11.50
Ferrotungsten, stand., lb. cont.	1.00 to 1.10
Ferrovanadium, 30-40 per cent, per lb., contained, on analysis	3.15 to 3.65
Ferro-carbon-titanium carload producers' plants, net ton	150.00
Do, one-ton to c. l.	170.00
Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis (18 per cent)	91.00
Ferrophosphorus, electrolytic per ton carload, 23-25% f.o.b. Anniston, Ala., 24%	122.50

†Carloads. Differentials apply to large quantities.

*To users of carloads to 500 tons annually. Differentials apply to users of larger quantities.

Fluorspar

85 and 5 per cent grade

Washed gravel Kentucky and Illinois mines, per net ton	$13.50 to 14.00
Washed gravel, import duty paid east, tide, gross ton	18.50 to 19.00

Pig Iron

Market Quieter, but Prices Are Steady—Shipments Lagging—Southern Output Reduced

PIG IRON PRICES, PAGE 58

Pittsburgh—Demand for pig iron is little changed from the recent quiet rate but occasional gain is noted in consumers' interest in small lots. Shipments show no further decrease, consisting of scattered carloads. Some improvement is anticipated in August as a result of further depletion of stocks this month. No. 2 foundry, malleable, basic and bessemer hold at $17, base, valley.

Boston—More cheerful reports are heard regarding contemplated increases in foundry operations in this district. Sales in the past week increased to 6000 tons, but 5000 tons of this was basic, sold by the Mystic Iron Works, Everett, Mass.

New York—Pig iron sales during the week reached approximately 8000 tons, including one lot of 2400 tons of foundry iron. Reports of the latter going to a northern New Jersey melter are not confirmed. About 2000 tons of iron is on active inquiry. Sales during the last three weeks approach 25,000 tons. A. P. Smith Mfg. Co., East Orange, N. J., has closed on 750 tons. Reports of shading are heard, with Buffalo iron easy at $15, furnace, and southern iron $11, furnace. Differentials are not strictly held.

Philadelphia—An additional sale of 1000 tons of basic iron features the market, and more basic is being figured. Otherwise the market is dull. Eastern Pennsylvania foundries are operating an average of three days a week.

Buffalo—Pig iron sellers report increased inquiry in the East, with a highly competitive situation which prevents orders being placed here despite a price of $15, base. Shipments have been small. Several sellers are trying to restore the $16 base on small eastern orders.

Youngstown, O.—Small sales of various grades of pig iron continue to be made by local furnaces. No basic sales have been made here for some time, but small lots of standard copper-free low phosphorus are going to consumers from time to time. No. 2 foundry, bessemer, malleable and basic hold at $17, valley furnace, while standard low phosphorus brings $27, valley furnace.

Cleveland — Foundries in this district are operating at the lowest point of the year and new demand for pig iron is quiet. Some of the automotive foundries are to close for midsummer vacations and taking inventory, and it is expected that when they resume operations arrangements will be made for their last half pig iron requirements. Inquiries in general have tapered, and shipments are slightly below the June rate. Furnace interests with headquarters at Cleveland booked approximately 6000 tons in the past week. Prices are unchanged at $17, base, furnace, for delivery in the Cleveland area; $16 to $17, base, furnace, in competitive Ohio and Indiana territory, and $17 to $17.50 in Michigan.

Cincinnati—Bookings here include 500 tons of northern iron for an Ohio melter who inquired for 1000 tons, with the probability that a Cleveland furnace booked the remainder. Prices on northern iron in competitive districts are soft, but southern furnaces hold at $11, base, Birmingham.

Chicago—Several negotiations are on for late-year shipments of pig iron, some of which would extend through fourth quarter. The foundry melt is barely 20 per cent because of the large number of plants down for the remainder of this month. Spot orders and such forward business as is closed go at $17.50, base, Chicago furnace, except occasional offerings of steelworks iron. Several lots of southern iron have been offered in this district at slightly under $11, base, Alabama furnace, but most sellers are holding to this price, equivalent to $17.01, delivered. Only one of the charcoal iron furnaces in this territory is active.

St. Louis—Small melters who allowed their stocks to dwindle below the safety point have been buying carload lots, the aggregate in the past week being 2500 to 3000 tons. Southern producers shared in this business, at $11, base, furnace, or $15.42, delivered, St. Louis. Northern iron was sold at $17.50, base, furnace.

Birmingham, Ala.—Inquiries indicate no change of policy on the part of consumers in buying only for immediate needs. Production has been reduced, with two additional furnaces blown out in the past week. At two others the rate of output has been lowered.

Toronto, Ont.—Demand for merchant pig iron continues light, melters buying only for prompt requirements. Producers are carrying little contract business on their books. Prices are unchanged.

Ferroalloys Consumption Continues at Slow Rate

Ferroalloy Prices, Page 58

New York—Trading in ferromanganese is light in line with curtailed steelmaking operations. Prices are unchanged with $85, duty paid, prevailing for car lots. Domestic spiegeleisen is dull with prices nominally $35, furnace, for 19 to 21 per cent. Special ferroalloys are unchanged with buying slack. Special ferroalloys, such as vanadium and chrome are quiet and unchanged.

Pittsburgh—Specifications for ferroalloys lack improvement, generally continuing at the extremely low rate of the past several weeks. Shipments of ferromanganese and spiegeleisen continue to reflect general quietness in steelmaking operations, while business in special ferroalloys also is at the year's lowest rate. Prices are unchanged, with ferromanganese continuing $89.79, delivered, and spiegeleisen $30, furnace.

Tin Plate Operations Tend to Lower Levels

Tin Plate Prices, Page 49

Pittsburgh—Tin plate is in a rather quiet market, operations showing little change but tending downward while shipments show the usual seasonal decline from the activity of spring and early summer. Output is slightly under 65 per cent, but precedent calls for lower production over the next six weeks unless can companies find that they have underestimated tin plate requirements for the various vegetable packs. Tin plate continues $5, Pittsburgh, per base box.

Youngstown, O.—Seasonal reduction in tin mill activity is strongly in evidence. Last week Thursday is was decided to shut down the Republic Steel Co.'s Warren tin plate mills which have been operated ever since the middle of January at almost 100 per cent. However, sufficient business accumulated meanwhile to warrant starting 13 of the company's 24 tin mill units at Warren this week. The end of a good canning season's demand has not disappointed tin plate makers as it was entirely seasonal and expected about this time.

Model 24-P ejection type press, having box 100" long, 20" wide, 42" deep. Finished bales measure 20" x 14" x 14" minimum. Can be equipped with power operated loading hopper

LOGEMANN SCRAP METAL PRESSES

Hydraulically compressed scrap commands at all times the *best price,* and can be conveniently stored and held for favorable markets; it is easily handled; it practically eliminates corrosion; it saves much time in remelting; cars can be easily loaded to capacity.

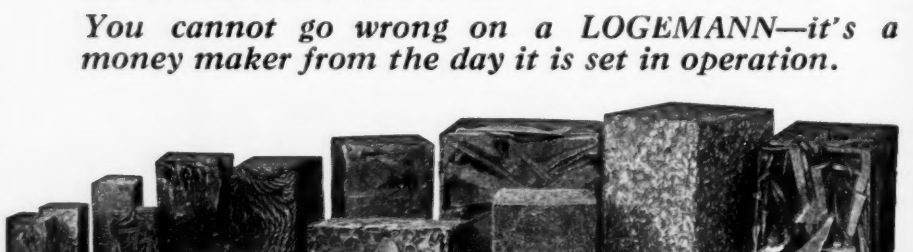
LOGEMANN Presses are built in several types and sizes to suit all requirements.

You cannot go wrong on a LOGEMANN—it's a money maker from the day it is set in operation.

PIONEERS!

LOGEMANN Scrap Metal Presses, pioneers in this industry, enjoy an enviable reputation for long life and economical operation. They are in daily use in practically every large sheet mill, stamping plant, scrap yard, and in metal-working establishments of all kinds.

Our many years of accumulated experience, and services of our Engineering Department are at the disposal of all plants accumulating metal scrap of any kind.



LOGEMANN BROTHERS COMPANY, 3126 Burleigh St., MILWAUKEE, WIS.

Scrap

Prices Change Little Except in Adjustment—Scarcity and Buying Reserves Are Factors

Chicago—Steel scrap prices are withstanding the pressure of restricted shipments and sporadic inquiries and sales, with no perceptible weakness. A more cheerful outlook results from the fact that melters that had not been in the market for three or four months now are placing moderate requirements. This activity does not appear to result from increased business for melters, but is taken to indicate something of their forward prospects. Scrap interests feel this may be part of a general movement to take advantage of existing low prices for various raw materials. Prices on several grades have been revised downward to maintain differentials that have become out of line in recent erratic trading, but this appar-

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	$8.00 to $9.00
Boston, dealers	4.00 to 4.10
Buffalo, No. 1	9.00 to 9.50
Buffalo, No. 2	7.50 to 8.00
Chicago	8.50 to 9.00
Cinn., deal.	7.50 to 8.00
Cleve., No. 1	8.50 to 9.00
Cleve., No. 2	8.00 to 8.25
Det., No. 1 deal.	7.50 to 8.00
Det., No. 2 deal.	6.00 to 6.50
E. Pa. del. mill	8.00 to 9.50
N. Y. deal. R. R.	4.50 to 6.50
N. Y. deal. No. 2	3.50 to 4.00
N. Y. deal. yd.	4.00 to 4.50
Pitts., No. 1	10.50 to 11.00
St. L. No. 1 sel.	8.25 to 8.75
Federal, Ill.	8.00 to 8.50
Granite City, Ill.	7.00 to 7.50
Valleys, No. 1	11.00 to 11.50

COMPRESSED SHEETS

Buffalo, dealers	7.50 to 8.00
Chicago	7.00 to 7.50
Cleveland	7.50 to 8.00
Detroit, dealers	7.00 to 7.50
E. Pa. new mat.	8.00 to 9.00
Pittsburgh	10.50 to 11.00
Valleys	10.50 to 11.00

BUNDLED SHEETS

Buffalo	5.50 to 6.00
Cinci., deal.	6.75 to 7.25
Cleveland	6.50 to 7.00
Eastern Pa.	6.50 to 7.00
Pittsburgh	8.00 to 8.50
St. Louis	5.50 to 6.00

SHEET CLIPPINGS LOOSE

Chicago	4.00 to 4.50
Cincinnati	4.00 to 4.50
Detroit, dealers	4.00 to 4.50
St. Louis	5.50 to 6.00

STEEL RAILS SHORT

Birmingham	11.00 to 11.25
Boston, dealers	3.00 to 4.10
Buffalo	12.00 to 12.50
Chicago (3 ft.)	10.00 to 10.50
Chicago (2 ft.)	10.75 to 11.25
Cinci., deal.	13.00 to 13.50
Detroit, deal.	11.00 to 11.50
Pitts. (open-hearth, 3 ft. and less)	12.50 to 13.00
St. Louis	12.00 to 12.50

STOVE PLATE

Birmingham	7.00 to 7.50
Boston, con.	5.00 to 5.50
Buffalo	7.75 to 8.00
Chicago, net	7.00 to 7.50
Cinci., deal. net	4.50 to 5.00
Det., net deal.	4.00 to 4.50
Eastern Pa.	7.50 to 8.00
N. Y., deal. mill	4.00 to 4.50
St. Louis	7.00 to 7.50

COUPLERS, SPRINGS

Buffalo	11.25 to 11.75
Chicago	9.75 to 10.25
Eastern Pa.	13.00
Pittsburgh	12.75 to 13.25
St. Louis	8.75 to 9.25

ANGLE BARS—STEEL

Chicago	9.25 to 9.75
St. Louis	8.25 to 8.75

LOW PHOSPHORUS

Buffalo, billets and bloom crops	12.75 to 13.25
Cleveland bil. and bloom crops	12.00 to 12.50
Eastern Pa.	13.50 to 14.00
Pittsburgh billet bloom crops	14.50 to 15.00
Pitts. sheet bar crops	13.50 to 14.00

FROGS, SWITCHES

Chicago	8.50 to 9.00
St. Louis	9.50 to 10.00

SHOVELING STEEL

Chicago	8.50 to 9.00
Cleveland	6.25 to 6.75
St. Louis	8.00 to 8.50

RAILROAD WROUGHT

Birmingham	8.00 to 8.50
Boston, dealers	8.00 to 8.50
Buffalo, No. 1	7.00 to 7.50
Buffalo, No. 2	9.00 to 9.50
Chicago, No. 1	8.25 to 8.70
Chicago, No. 2	8.50 to 9.00
Cinci., No. 2	7.50 to 8.00
Eastern Pa.	10.00
N. Y., No. 1, deal.	9.00 to 9.50
Pitts., No. 2	10.50 to 11.00
St. Louis, No. 1	5.25 to 5.75
St. Louis, No. 2	8.00 to 8.50

SPECIFICATION PIPE

Boston	5.00 to 5.25
Eastern Pa.	10.00 to 10.50
N. Y., deal.	5.50 to 6.00

BUSHELING

Buffalo, No. 1	7.50 to 8.00
Chicago, No. 1	6.75 to 7.25
Cinn., No. 1 dl.	6.00 to 6.50
Cinn., No. 2	3.50 to 4.00
Cleve., No. 2	6.00 to 6.50
Det., No. 1 new deal.	5.50 to 6.00
St. L., No. 1	6.00 to 6.50
Val. new No. 1	9.50 to 10.00

MACHINE TURNINGS

Birmingham	4.50 to 5.00
Boston, dealers	0.60 to 1.00
Buffalo	4.75 to 5.00
Chicago	3.75 to 4.25
Cinn., deal.	3.75 to 4.25
Cleveland	4.50 to 5.00
Detroit	3.50 to 4.00
Eastern Pa.	5.00 to 6.00
N. Y., deal.	2.00
Pittsburgh	6.50 to 7.00
St. Louis	3.50 to 4.00
Valleys	7.50 to 8.00

BORINGS AND TURNINGS For Blast Furnace Use

Boston	0.50 to 0.80
Buffalo	5.75 to 6.25
Cinn., deal.	4.50 to 5.00
Cleveland	6.25 to 6.75
Detroit, deal.	4.25 to 4.75
Eastern Pa.	5.50
N. Y., deal.	2.00
Pittsburgh	7.50 to 8.00

CAST IRON BORINGS

Birming., chem.	12.50 to 13.00
Birming., plain	4.50 to 5.00
Boston, chem.	7.00 to 7.25
Boston, deal.	0.60 to 1.00
Buffalo	5.75 to 6.25
Chicago	3.75 to 4.25
Cinn., deal.	3.75 to 4.25
Cleveland	6.25 to 6.75
Detroit, deal.	4.25 to 4.75
Eastern Pa.	5.00 to 6.00
E. Pa., chem.	11.50 to 12.50
N. Y., deal.	2.00 to 2.50
Pittsburgh	7.50 to 8.00
St. Louis	5.00 to 5.50

PIPE AND FLUES

Cinn., deal.	6.00 to 6.50

RAILROAD GRATE BARS

Buffalo	6.50 to 7.00
Chicago, net	5.75 to 6.25
Cincinnati	5.50 to 6.00
Eastern Pa.	7.50 to 8.00
N. Y., deal.	5.00 to 5.50
St. Louis	6.00 to 6.50

FORGE FLASHINGS

Boston, deal.	5.00 to 5.25
Buffalo	7.50 to 8.00
Cleve. ov. 10 in.	6.50 to 7.00
Detroit	6.00 to 6.50

FORGE SCRAP

Boston, del.	5.00 to 5.25
Chicago	11.50 to 12.00
Eastern Pa.	9.00 to 10.00

ARCH BARS, TRANSOMS

Chicago, net	10.50 to 11.00
St. Louis	8.25 to 8.75

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	7.50 to 8.00
Chi., steelworks	7.50 to 8.00
Cleveland	6.75 to 7.00
Eastern Pa.	8.00 to 9.00
Pittsburgh	8.75 to 9.25
St. Louis	7.00 to 7.50

STEEL CAR AXLES

Birmingham	12.50 to 13.00
Boston, ship. pt.	11.00 to 12.00
Buffalo	14.50 to 15.00
Chicago	12.90 to 13.45
Eastern Pa.	18.50 to 19.50
St. Louis	13.00 to 13.50

SHAFTING

Bos., ship. pt.	10.00 to 10.50
Chicago	9.55 to 10.10
N. Y., deal.	12.00 to 13.00
St. Louis	9.50 to 10.00
E. Penna.	18.00

CAR WHEELS

Birming., iron	9.00 to 10.00
Boston, iron	14.00 to 14.50
Buffalo, iron	10.50 to 11.00
Buffalo, steel	10.75 to 11.25
Chicago, iron	10.00 to 10.50
Chi. rolled steel	10.00 to 10.50
Cincinnati, iron	10.50 to 11.00
E. Pa. steel	12.00
E. Pa. iron	12.50 to 13.00
Pitts. iron	10.50 to 11.00
Pitts., steel	12.75 to 13.25
St. Louis, iron	7.75 to 8.25
St. Louis, steel	10.00 to 10.50

NO. 1 CAST SCRAP

Birmingham	9.50 to 10.00
Buffalo (mach.)	9.00 to 10.00
Boston, textile	10.00 to 10.50
Chicago, mach.	9.80 to 10.35
Chi., railroad	8.70 to 9.25
Chicago, agri.	8.40 to 8.95
Cinn., mach. cup., gross	12.25 to 12.75
Cleve. cupola	10.00 to 10.50
Det., net deal.	8.00 to 8.50
E. Pa. cupola	12.50 to 13.00
N. Y. cup. deal.	7.00 to 7.50
N. Y., del. local foundries	12.00
Pitts., cupola	10.00 to 10.50
San Fran., del.	13.50 to 14.00
Seattle	7.50 to 8.00
St. L. No. 1 ma.	9.00 to 9.50
St. L. No. 1	8.25 to 8.75

HEAVY CAST

Boston	10.50 to 11.00
Bos. mach. cast	11.50 to 12.50
Buffalo, break	6.50 to 7.00
Cleve., break	6.50 to 7.00
Detroit, auto, net deal.	10.50 to 11.00
Det., break., dl.	5.50 to 6.00
Eastern Pa.	10.00 to 11.00
N. Y. No. 1 dl.	7.00 to 7.50
N. Y. break. dl.	6.00 to 6.50
Pittsburgh	8.00 to 8.50

MALLEABLE

Boston R. R.	13.00 to 13.50
Buffalo	10.00 to 10.50
Chicago, agri.	9.00 to 9.50
Chicago, R. R.	9.50 to 10.00
Chicago, agri.	8.25 to 8.75
Chicago, R. R.	9.75 to 10.25
Cleveland, rail	10.00 to 10.50
Det. auto deal.	10.50 to 11.00
St. Louis, rail	8.00 to 8.50

RAILS FOR ROLLING 5 feet and over

Birmingham	10.50 to 11.00
Boston	7.50 to 8.00
Buffalo	10.00 to 10.50
Chicago	10.50 to 11.00
Eastern Pa.	11.50 to 12.00
New York	7.00 to 7.50
St. Louis	10.50 to 11.00

LOCOMOTIVE TIRES

Chicago, cut	11.50 to 12.00
St. L., No. 1	10.50 to 11.00

LOW PHOS. PUNCHINGS

Chicago	10.75 to 11.25
Buffalo	12.50 to 13.00
Eastern Pa.	13.00 to 14.00
Pittsburgh	13.50 to 14.00

ently does not represent an easing tendency. Heavy melting steel is nominal at $8.50 to $9.00, last consumer sales having been made at the top of the spread. A large melter of railroad malleable recently purchased at slightly under what was regarded the market and railroad coil and leaf springs are slightly off compared with recent trading. Some prices are guided by buying quotations paid by the dealers.

Boston—The best that can be said of the scrap market is that some heavy melting steel, mixed borings and steel turnings were moved, but in limited tonnages. Prices are firm.

New York—Scrap prices are steadier with a firmer undertone. Buying is light and collections off. No. 1 steel for barge shipment to the Buffalo district continues at $6.25, dock. A New Jersey foundry is reported to have paid $9.75, delivered. Dealers' buying prices for specification pipe is lower with $9.50 to $10 reported for delivery in the East. Heavy steel for Claymont and eastern Pennsylvania points is reported at $8, but little is purchased in this district for delivery at that price.

Philadelphia—Dealers are paying somewhat higher for scrap for shipment against contracts, one broker formerly paying $6.50 for No. 2 melting steel now paying premiums of 15 to 50 cents. This is because scrap is coming out more slowly on account of present low prices.

Scrap prices are advancing on actual transaction of 5000 tons of heavy melting steel at $9.50, delivered, or an advance of 50 cents. Heavy breakable cast has been sold at $10, which is now the minimum.

Buffalo—Operations in scrap are practically at a standsill here. Offers are unattractive to dealers and yards are doing practically nothing. Prices are nominal.

Pittsburgh—Additional strength has been given the steel and iron scrap market by sales of several grades to a nearby mill. Heavy melting steel is up 25 cents at $10.50 to $11, with lower-priced material disappearing. Compressed sheets are up 50 cents to the same level. Blast furnace grades, after an extended dormant period, advanced sharply on a sale at better than $8. Other grades reflect strength in melting steel but demand still is quiet.

Youngstown—Eagerness of several brokers in this district to cover on a recent order for 12,000 tons of No. 1 steel booked at $10 lends further strength to the market. Bids as high as $11 by brokers are reported. Most of this material is for delivery at Youngstown and the remainder at Massillon and Canton. New mill business is expected to develop $11 and higher on steel scrap. Compressed sheets are scarce and reflect the strength in heavy steel.

Cleveland—Iron and steel scrap activity is practically at a standstill. Limited shipments of blast furnace material continue to the Otis Steel Co. American Steel & Wire Co. is taking No. 1 steel on the order booked recently at $9.75. This material is being laid down in the mill's yard. Scrap orders have been placed by no other local steelworks interests. Foundries continue to show only slight interest in the market. Quotations remain unchanged and largely nominal this week.

Detroit—Scrap lists are small. Little scrap is moving by water to Buffalo. Local consumption is at about the rate of recent weeks. Blast furnace grades, cast iron borings and short turnings and mixed borings, forge flashings and short shoveling turnings are up 25 cents a ton.

Cincinnati—Quotations on iron and steel scrap remain unchanged, but are considered somewhat firmer because of improved prices reported recently for Louisville & Nashville railroad scrap. Dealers are wary of a short position.

St. Louis—With operations at iron and steel plants at only about one-fourth capacity, demand for iron and steel scrap has fallen to a low ebb. Purchasing by melters is confined to small lots of special grades. Interest in future requirements is lacking.

Birmingham, Ala.—No change is observed in old materials, car lot purchases being few. Melters are not carrying much stock on yards. Prices are unchanged.

Toronto, Ont.—Canadian scrap markets are dull. Mills are out of the market for big tonnages and are pickng up odd lots of heavy melting steel, but decline offerings of turnings. Demand for iron grades is dull. Occasional orders are appearing for No. 1 machinery cast. while stove plate and malleable scrap are dull and other iron grades spotty. Dealers are out of the market and prices are unchanged.

Canadian Scrap

Dealers' Buying Prices

MONTREAL

Per Gross Ton

Iron axle	$11.00
Steel axles	10.00
Car wheels	8.00
Stove plate	8.00
Wrought pipe	2.00
Turnings	2.00
Heavy melting steel	6.00

TORONTO

Steel axles	7.00
Iron axles	7.00
Heavy melting steel	7.00
Turnings	2.00
No. 1 mach. cast (net)	9.00
Malleable (net)	7.00

Coke

Foundry Fuel Shipments Steady —Low Point in Consumption Believed Reached—Prices Hold

COKE PRICES, PAGE 58

Pittsburgh—Shipments of beehive coke are steady but slow, for all grades. Furnace fuel is in poor spot demand, and usually commands $2.40 for standard material. Foundry coke business is well maintained but light, with the low point believed reached in foundry operations. The market continues $3.25 to $4.50.

Boston—Foundries are well supplied with coke, and the slight improvement in the melt is not expected to be reflected in the coke market for some time.

New York—Coke oven operations have been sharply curtailed. Dullness continues in beehive coke, with most foundries in the East on reduced schedules. Prices are unchanged with beehive furnace at $2 to $2.25, Connellsville, Pa., and standard grades of beehive foundry coke at $3 to $3.25. For premium brands $4.50 is the going price at Latrobe, Pa., or $4.30, Connellsville. By-product foundry coke is unchanged at $8.70 to $9.10, Newark, N. J.; $8.75, Philadelphia, and $10.50, New England.

Cincinnati—No improvement is noted in the quiet market for by-product foundry coke. The price remains $9, delivered Cincinnati.

St. Louis—Typical summer conditions prevail in the coke market. A reduction in the melt has restricted requirements, and deliveries have fallen to the low point of the season.

Birmingham, Ala.—Production has been dropped, mainly because of lagging demand for domestic fuel. The foundry coke market also is quieter.

EVEN DURING PLAY-TIME

APOLLO
STEEL
COMPANY

FULL FINISHED SHEETS

Apollo Steel Company's steel sheets are an important contribution to the modern design of automobiles. No modern drawing problem is too difficult for them.

The selection of the proper sheets for your particular drawing requirements is made easy by the cooperation of Apollo Steel Company's engineers.

APOLLO STEEL COMPANY

General Offices: APOLLO, PA.
Pittsburgh Office: Oliver Bldg.

Branch Offices:

BOSTON	3 Harris Ave.	LYNCHBURG	612 Krise Bldg.
BUFFALO	Marine Trust Bldg.	NEW ORLEANS	437 Decatur St.
CHICAGO	180 N. Michigan Ave.	NEW YORK	1372 Hudson Term. Bldg.
CLEVELAND	1655 Union Trust Bldg.	PHILADELPHIA	607 Otis Bldg.
CINCINNATI	1002 American Bldg.	ROCHESTER	421 Central Trust Bldg.
DETROIT	2034 Dime Bank Bldg.	SAN FRANCISCO	Monadnock Bldg.
INDIANAPOLIS	721 Illinois Bldg.	ST. LOUIS	2817 Laclede Ave.
LOS ANGELES	New Orpheum Bldg.	SYRACUSE	Hills Bldg.
SEATTLE	2712-4th Ave. South		

Pacific Coast

Award of 110,000 Tons for Golden Gate Bridge Meets Court Delay—General Inquiry Quickens—Pipe Tonnage Is Larger—Public Projects in Northwest Make Fairly Large Total

San Francisco—(*By Air Mail*)—Low bidders on the 106,000-ton Golden Gate bridge project have been asked by the directors of the bridge district to enter into a six-month agreement to stand by their proffers made when bids were opened for the structure June 17, as legal contracts can not be awarded as long as uncertainty exists in regards marketing the bonds.

Before the bonds can be sold the state supreme court must approve their legality with respect to the power of the bridge directors to levy taxes in unlimited amounts to meet bond interest and retirement payments in the event that the bridge revenue is not sufficient to meet these charges.

Bars, Plates and Shapes

Unnamed interests booked 500 tons each of concrete bars for a federal prison at Anthony, N. Mex., and 500 tons for the veterans' hospital at Albuquerque, N. Mex. A wharf at San Pedro, Calif., went to an unstated company. Bids have been opened on 400 tons for a city hall in Beverly Hills, Calif. Bids will be opened Aug. 5 on 250 tons for a mole in Los Angeles and on 208 tons for a bridge over Bixby creek in Monterey county, Calif. No change in out-of-stock prices is noted, 2.60c, base on carload lots applying in the San Francisco district and 2.50c, base, holding firm in the Los Angeles section. The Columbia Steel Co. booked 155 tons of rivet rods for Mare Island and is low bidder on 200 tons of merchant bars for the Mare Island and Puget Sound navy yards. Prices on mild steel bars continue unchanged at 2.05c c.i.f.

The only plate award of importance involved 200 tons of 16-inch cement-lined welded steel pipe for Santa Barbara, Calif, and was placed with an unnamed interest. F. B. Gridley, Pasadena, Calif., secured the general contract. Bids will be called for soon for 7000 tons for two cruisers to be built at the Mare Island navy yard. Prices continue weak at 1.90c, to 2.00c, c.i.f.

Jones & Laughlin Steel Co. booked 400 tons of sheet piling for the Rio Puerco creek bridge in Phoenix, Ariz. The Pacific Iron & Steel Co. took 200 tons for a grade separation at Firestone and Washington boulevards, Los Angeles and the Virginia Bridge & Iron Co. secured 240 tons for six plate girder spans for the Southern Pacific Co., San Francisco. Bids have also been opened on 1100 tons for a warehouse at Broadway pier, San Diego, Calif., and on 241 tons for a bridge over the Fresno river at Madera, Calif. The Golden Gate Iron Works is low bidder on 520 tons for the health center, San Francisco.

Other Finished Material

Unnamed interests took 483 tons of 2-inch pipe for Los Angeles, 105 tons of 2-inch pipe for Long Beach, Calif., 968 tons of 2 to 12-inch pipe for Boulder City, Calif. No action has been taken on two lots of pipe for Oakland, involving 2365 tons of 2 to 8-inch pipe and 750 tons of 16-inch pipe. Burbank has opened bids on 266 tons of 20 and 24-inch. Bids will be opened July 27 for 324 tons of 4 to 12-inch pipe for Huntington Park, Calif., and Aug. 3 for 127 tons of 4 to 10-inch pipe for a sewer system for Los Angeles. Crane Co. booked 150 tons of 4 to 8-inch Matheson steel pipe for the Vista irrigation district, Vista, Calif.

Coast Pig Iron Prices

Utah basic	$22.00 to 24.00
Utah foundry	22.00 to 24.00
*German	24.25
*Indian	22.00 to 24.00

*C.i.f. duty paid.

Steel Awards Heavier

Seattle—Award of several steel contracts gave the Pacific Northwest market a more promising aspect this week. Other projects of importance, which have been pending for some time, are up for decision soon. Tonnages booked totaled nearly 3800 tons and included 1600 tons for a pipe line and 900 tons reinforcing for the Seattle Marine hospital. During the week 24 public works jobs involving $2,577,000 were awarded.

Two unusually large contracts have attracted wide attention. Vancouver, B. C., has awarded for $1,250,000 two contracts for a water system tunnel and pipe construction. Northern Construction Co. will excavate the tunnel and Harrison & Lamond Construction Co. has the pipe project. The type of pipe to be used will be determined by Commissioner E. A. Cleveland. The pressure tunnel will be 3100 feet long and 4700 feet of pipe will be laid. The contractors for the pipe bid $226,000 for welded pipe and $234,665 for Hume process pipe, either to be manufactured by Dominion Bridge Co. Bids were opened at Yakima, Wash., for the Cle Elum dam, Winston Bros., Minneapolis, being low at $1,311,533. This project involves 2000 tons of concrete bars and shapes to be supplied by the government.

Bars, Plates and Shapes

Through the Chicago office of Bethlehem Steel Co., N. P. Severin & Co., general contractors for the government Marine hospital at Seattle, awarded 900 tons of concrete bars which will be rolled by the Pacific Coast Steel Corp. at Seattle.

Two contracts involving 100,000 feet of 16-inch water pipe have been awarded by the Mountain Lakes Water Co. to serve a large suburban district between Seattle and Everett. Of the total, 60,000 feet went to wood stave manufacturers and the remainder will be steel. The latter contract, involving 1600 tons of plates, was awarded to the Steel Tank & Pipe Co., Portland, Oreg. Federal Pipe & Tank Co., Seattle, will supply wood pipe. In the latter contract is 350 tons of steel wire, malleable cast shoes and steel bands. Tacoma is considering alternate bids for 8262 feet of 52-inch steel, wood stave or concrete pipe. Steel Tank & Pipe Co., Portland, was low for steel pipe at $52,922. The wood pipe figure was $49,073 and concrete $75,769. Isaacson Iron Works, Seattle, has the contract to supply 150 tons of shapes for a warehouse for machinery mart, Fourth avenue south and Hanford street, Seattle, general contract to General Construction Co.

Pipe Sales Are Moderate

Cast iron pipe awards this week approximated 900 tons. The largest contract, 750 tons of 20-inch, went to the National Cast Iron Pipe Co., Birmingham. This material is for an improvement in East Sixty-fifth street, Seattle. Two other Seattle jobs, involving 138 tons, were divided. United States Pipe & Foundry Co. took 63 tons of 12-inch for North Broadway and 75 tons of 8-inch pipe for Emerson street went to Pacific Waterworks Supply Co. Bailey Meter Co., Cleveland, has the contract for furnishing Olympia, Wash., five orifice flow meters.

Steel, Wrought and Cast Iron Pipe, and Tubing

Welded Iron, Steel Pipe

Base Price $200 Ton

Base Discounts on steel pipe, Pittsburgh and Lorain, O., to jobbers in carloads. Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del., 2½ points less. Wrought pipe, Pittsburgh base.

BUTT WELD

	Steel			Iron	
In.	Blk.	Gal.	In.	Blk.	Gal.
⅛	58	44½	⅛	23	5
¼	62	50½	¼	28	11
⅜—⅝	64	52½	⅜—1¼	31	15
			1½—2	35	18

LAP WELD

2	57	45½	2	23	9
2½—6	61	49½	2½—3½	28	13
7—8	58	45½	4—6	30	17
9—10	56	43½	7—8	29	16
11—12	55	42½	9—12	26	11

BUTT WELD

Extra strong, plain ends

⅛	55	44½	¼ & ⅜	+13	+48
¼	60	49½	½	23	7
⅜—1½	62	51½	¾	28	12
2—3	63	52½	1—2	34	18

LAP WELD

Extra strong, plain ends

2	55	44½	2	29	13
2½—4	59	48½	2½—4	34	20
4½—6	58	47½	4½—6	33	19
7—8	54	41½	7—8	31	17
9—10	47	34½	9—12	21	8
11—12	46	33½			

To large jobbers these discounts on steel pipe increased on black by 1 point and two discounts of 5 per cent; on galvanized by 1½ points with two 5 per cents. Direct mill shipments, base, 5 and 2½. On iron pipe large jobbers obtain additional discount of 1 point with 5 and 2½ per cent on black and galvanized.

BOILER TUBES

Carload Discounts, f. o. b. Pittsburgh

Lap Welded Steel		Charcoal Iron	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¾—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron. Smaller quantities subject to following modifications from base discounts.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Charcoal Iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES

COLD DRAWN

1 inch	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

HOT ROLLED

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½, 5, 6	46

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Tubing

Cold drawn; f.o.b. mill discounts

Random lengths over 5 ft. 55%
Selected lengths, 1—18 ft. 53%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

Six-inch and over, Bir. ....$35.00 to 36.00
Four-inch, Birmingham .... 39.00 to 40.00
Four-inch, Chicago ..... 45.00 to 47.00
Six to 24-inch, Chicago..... 42.00 to 44.00
Six-inch and over, N. Y..... 32.50 to 34.50
Four-inch, New York ..... 38.50 to 39.50
Stand. fittings, Bir. base.... $100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch plus $20; gas pipe fittings, $5 higher. Class A pipe $4 higher than Class B.

Warehouse Quotations at Leading Centers, in Cents Per Pound

STEEL BARS

Baltimore	3.00c
Boston	3.265c
Buffalo	3.00c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Cleveland	2.75c
Detroit	2.85c
Houston	3.00c
Los Ang.	3.40c
New York‡(d)	3.10c
Philadelphia	2.60c
Pittsburgh	2.60c
Portland	3.15c
San Frans.	2.40c
Seattle	3.00c
St. Louis	3.00c
St. Paul	3.00c
Tulsa	3.65c

IRON BARS

Baltimore	3.25c
Boston	3.265c
Buffalo	3.15c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Detroit	3.00c
New York‡(d)	3.10c
Philadelphia	2.60c
St. Louis	3.00c
Tulsa	3.65c

REINFORC. BARS

Baltimore	2.50c-3.31c
Boston	3.265c
Buffalo	2.95c
Chattanooga	3.00c
Cincinnati	3.00c
Cleveland	2.10-2.25c
Detroit	2.85c
Houston	3.00c
Los Ang. cl.	2.40c
Los Ang. lcl.	2.70c
New York	2.65c-3.10c
Phila.	2.40c-3.00c
Pittsburgh	2.75c
San Fran. cl.	2.30c
San Fran. lcl.	2.50c
Seattle	3.00c
St. Louis	3.15c
Tulsa	3.65c
Young.	2.30c-2.60c

SHAPES

Baltimore	3.00c
Boston	3.365c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland	2.95c
Detroit	3.10c
Houston	3.25c
Los Ang.	3.40c
New York(d)	3.10c
Philadelphia	2.50c
Pittsburgh	2.85c
Portland	3.15c
San Fran.	2.40c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	3.75c

PLATES

Baltimore	3.00c
Boston	3.365c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland, ¼-in. and thicker	2.95c
Clev., 3/16-in.	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles	3.40c
New York(d)	3.30c
Philadelphia	2.50c
Phila. floor	5.10c
Pittsburgh	2.85c
Portland	3.15c
San Fran.	2.40c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	2.75c

NO. 10 BLUE

Baltimore	3.25c
Boston	3.915c
Buffalo	3.50c
Chattanooga	3.50c
Chicago	3.20c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.35c
Houston	3.90c
Los Ang.	3.95c
N. Y. (d)	3.00c-3.40c
Portland	4.00c
Phila.*† (e)	3.05c
Pitts.**	2.60c to 2.85c
San Fran.	3.65c
Seattle	3.75c
St. Louis	3.45c
St. Paul	3.40c
Tulsa	3.95c

NO. 24 BLACK

Balt.*†	3.50c
Boston	4.70c
Buffalo	3.70c
Chattanooga	3.65c
Chicago	3.55c
Cincinnati	3.75c
Cleveland	3.60c
Detroit	3.50c
Los Ang.	4.70c
New York	3.50c-3.65c
Phila.*†(e)	3.55c
Pitts.**	3.40c
Portland	4.50c
San Fran.	4.15c
Seattle	4.25c
St. Louis	3.80c
St. Paul	3.545c
Tulsa	4.10c

NO. 24 GAL. SHEETS

Balt.*†	4.00c
Boston	5.45c
Buffalo	4.10c
Chattanooga	3.95c
Chicago (local del.)	4.35c
Chicago (outside)	4.35-4.60c
Cincinnati	4.25c
Cleveland	4.00c
Detroit	4.00c
Houston	5.40c
Los. Ang.	5.10c
New York	4.00c-4.10c
Phila.*† (e)	4.00c
Pitts.**	4.00c
Portland	5.00c
San Fran.	4.65c
Seattle	4.75c
St. Louis	4.35c
St. Paul	4.23c
Tulsa	4.60c-4.75c

BANDS

Baltimore	3.50c
Boston	4.015c-5.00c
Buffalo	3.35c
Chattanooga	3.20c
Chicago	2.95c
Cincinnati	3.20c
Cleveland	3.00c
Det. 3/16-in. & lighter	3.15c
Houston	3.65c
Los Ang.	4.30c
New York(d)	3.40c
Philadelphia	2.90c
Pittsburgh	2.95c
Portland	3.50c
San Fran.	3.75c
Seattle	3.50c
St. Paul	3.75c
Tulsa	3.85c

HOOPS

Baltimore	3.50c
Boston	5.50c-6.00c
Buffalo	3.90c
Chicago	3.50c
Cincinnati	3.75c
Cleveland	3.55c
Det. No. 14 & lighter	3.65c
New York	3.75c
Philadelphia	3.15c
Pittsburgh	3.60c
Seattle	4.90c
St. Paul	3.75c

COLD FIN. STEEL

Rounds & Hexagons

Baltimore (c)	3.30c
Boston	3.50c
Buffalo	3.15c
Chattanooga*	3.75c
Chicago	3.10c
Cincinnati	3.50c
Cleveland	3.10c
Detroit	3.65c
Los Ang. (a)	4.50c
New York	3.40c
Philadelphia*	3.40c
Pittsburgh	3.10c
Portland (a)	4.50c
San Fran.(a)	4.25c
Seattle (a)	4.50c
St. Paul (a)	3.85c
St. Louis	3.35c
Tulsa	4.75c

Flats and squares 50c extra, except Tulsa, where 5.14c is quoted.
(a) Rounds, hex. only.

COLD ROLL. STRIP

Boston 0.100 in., 500 lb. lots	5.30c
Buffalo	5.65c
Chicago (soft) (b)	5.65c
Cincinnati	5.80c
Clev. (b)	5.55c
Detroit	5.40c
Phila. (c)	4.55c
New York	4.55c

(b) Net base straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.
(d) Minus quant. diff.
(e) New mill classif.
‡Domestic bars.
*Plus quantity extras.
**Less than 25 sheets.
*†50 or more bundles.

HOT OR COLD ROLLED
STRIP STEEL
Coiled or Cut to Length

SAVE WITH STEEL

1897-1931

THIRTY-FOUR YEARS of service to an exacting clientele have placed us in the forefront of producers of highest quality Hot and Cold Rolled Strip Steel, with an annual capacity of 250,000 tons.

High and low carbon strip steel is offered in all tempers, in width from ¾" to 24", in long coils or cut lengths, Hot and Cold Rolled.

We have recently added to our list of special products Bright Cold Rolled STAINLESS STEEL, in coils or cut lengths, made from ALLEGHENY METAL and ASCOLOY grades. These metals resist corrosion, may be welded or soldered, and are excellent for drawing and forming. Can be finished to a mirror surface.

WEST LEECHBURG STEEL COMPANY

General Offices: FARMERS BANK BUILDING, PITTSBURGH, PA.

HOT AND COLD ROLLED WLSCo STRIP STEEL

BRANCH SALES OFFICES:

NEW YORK · CHICAGO · DETROIT · HARTFORD · ST. LOUIS

PHILADELPHIA — EDGCOMB STEEL CO.
NEWARK — EDGCOMB STEEL CORP.
TOLEDO — DEAN HIGGINS & CO.

WAREHOUSE STOCKS OF COLD ROLLED STRIP STEEL ARE CARRIED BY
EDGCOMB STEEL CO., PHILADELPHIA—EDGCOMB STEEL CORP., NEWARK
JOS. T. RYERSON & SON, CHICAGO

Europe

Market Tone More Uncertain—Germans Liquidating Export British Steel Prices Held

London—(*By Radio*) — Decision by the British steel association to maintain prices has disappointed many consumers who have sent inquiries recently. Uncertainties with respect to the political situation on the Continent are having a depressing effect on all the British iron and steel markets.

STEEL's correspondent at Berlin reports German business at a standstill. Large accumulations of stocks are expected to be offered in the export markets at cut prices. Some activity is noted in the steel markets in France, but there is considerable anxiety regarding the business outlook. Merchant bar manufacturers in France have established a syndicate. A reserved attitude is reported in the Belgian markets. Polish works sold 2700 tons of rails in Holland.

In Britain the market for pig iron is stagnant and more furnaces are damping. Birmingham reports Continental steel bars offered at £4 12s 6d ($22.38), delivered. Offers of semifinished steel from the Continent have been withdrawn. Exports of galvanized sheets to South Africa and India are improving. Demand for tin plate is steady.

British Steel Greatly Hurt by Foreign Dumping

Birmingham, Eng.—The quarterly meeting at Birmingham usually provides an index to the state of affairs in the British iron and steel industry. The tone of the July meeting, however, was no better than previous meetings this year and it was generally agreed that while the debt settlement negotiations have imparted a better tone to the metal markets generally, iron and steel has yet to feel any benefit.

The chief complaint is foreign dumping and there is plenty of evidence to show that in the last three months there has been no relaxation of effort on the part of the Continental producer to capture British business. Since November iron and steel imports into the Tees have totaled 109,874 tons, compared with 99,443 tons in the corresponding eight months a year ago. In June imports gained over 3000 tons, principally accounted for by pig iron, 2717 tons, compared with 37 tons in 1914 and none last year.

No. 3 Iron Averages Lower

The average net selling price of No. 3 Middlesbrough pig iron for the quarter ended June 30 shows a slight fall and under the sliding scale blast furnacemen will sustain a reduction of wages of 1¼ per cent for third quarter. Middlesbrough producers do not show willingness to reduce the price of No. 3, which stands at £2 18s 6d ($14.22). They have to face Continental competition and keen competition from the Midlands. Midland makers are live to the possibilities of disposing of their surplus output in districts outside the Black Country area where they may sell at their own price without restriction by the Pig Iron Producers association. The Stafford Coal & Iron Co. in North Staffordshire is closing two blast furnaces, due to uneconomical operation. The company has been operating two furnaces, one on forge and foundry and the other on basic. They contend that heavy losses have already been sustained since the fall in the price of pig iron which amounted to 5 shillings ($1.21) in the last quarter while they complain bitterly of heavy dumping of iron from France, Belgium and Germany.

Continental Materials Higher

Merchants are selling Continental material at higher prices than those prevailing a few weeks ago and Continental houses are not pushing their products so vigorously, in the hope that the advance already made may be maintained and the situation stabilized in the next few weeks. It is increasingly difficult to persuade Midland works to buy Belgian iron and steel as they have already sufficient material in stock for present needs.

In the finished iron trade of South Staffordshire all departments are experiencing an unprecedented slump. Even marked bar mills are unable to work regularly and during the last quarter makers have found it expedient to reduce prices by 5 shillings a

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, July 20	*British* Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port	
Export Prices f.o.b. Ship at Port of Dispatch—By Cable								
PIG IRON		£ s d		£ s d		£ s d		£ s d
Foundry No. 3**	$14.19	2 18 6*	$11.76	2 8 6	$11.76	2 8 6	$11.82	2 8 9
Basic-bessemer	14.55	3 0 0	11.16	2 6 0	11.16	2 6 0	13.34	2 15 0
Hematite, Phos. .02-.05	15.28	3 3 0	.....	.....	.....	.....	16.98	3 10 0
SEMIFINISHED STEEL								
Billets	$25.46	5 5 0	$15.76	3 5 0	$15.76	3 5 0	$15.76	3 5 0
Wire rods	41.23	8 10 0	25.46	5 5 0	25.46	5 5 0	25.46	5 5 0
FINISHED STEEL								
Standard rails	$40.01	8 5 0	$31.52	6 10 0	$31.52	6 10 0	$31.52	6 10 0
Merchant bars	1.52c	7 0 0	.78c	3 10 6	.78c	3 10 6	.80c	3 12 6
Structural shapes	1.68c	7 15 0	.73c	3 6 0	.73c	3 6 0	.75c	3 8 0
Plates	1.79c	8 5 0	.91c	4 2 6	.91c	4 2 6	.90c	4 2 0
Sheets, black, 24 gage	1.90c	8 15 0	1.76c	8 0 0	1.76c	8 0 0	1.79c	8 2 6
Sheets, gal., 24 ga. corr.	2.12c	9 15 0	2.20c	10 0 0	2.20c	10 0 0	2.31c	10 10 0
Bands and strips	2.06c	9 10 0	.92c	4 3 9	.92c	4 3 9	.94c	4 5 0
Plain wire, base	2.06c	9 10 0	1.10c	5 0 0	1.10c	5 0 0	1.10c	5 0 0
Galvanized wire, base	2.39c	11 0 0	1.35c	6 2 6	1.35c	6 2 6	1.38c	6 5 0
Wire nails, base	2.39c	11 0 0	1.10c	5 0 0	1.10c	5 0 0	1.10c	5 0 0
Tin plate, box 108 lb.	$ 3.40	0 14 0	.....	.....	.....	.....	$ 8.25	1 14 0

Domestic Prices at Works or Furnace—Last Reported

			French Francs		Belgian Francs		Renten Marks	
Fdy. No. 3 Pig Iron**	$14.19	2 18 6	$11.79	300(2)	$12.83	460	$17.94	78
Basic pig iron	14.55	3 0 0	12.77	325(1)	11.58	415	19.67	85.50
Furnace Coke	2.67	0 11 0	5.70	145	5.16	185	4.92	21.40
Billets	25.46	5 5 0	19.26	490	17.72	635	25.41	110.50
Standard rails	1.79c	8 5 0	1.41c	785	1.57c	1,210	1.32c	127
Merchant bars	1.63c	7 10 0	.83c	460	.84c	645	1.33c	128
Shapes	1.90c	8 15 0	.99c	550	.82c	630	1.30c	125
Plates	1.95c	9 0 0‡	1.26c	700	.96c	735	1.53c	147
Sheets, black, 24 gage	1.90c	8 15 0	2.19c	1,215	1.82c	1,400	1.22c	117
Sheets, gal. 24 ga., corr.	2.12c	9 15 0	2.39c	1,325	1.47c	1,900	3.43c	330
Plain wire	2.06c	9 10 0	1.80c	1,000	2.08c	1,600	2.15c	207
Bands and strips	2.06c	9 10 0	1.05c	585	1.17c	900	1.54c	148

*Middlesbrough; †Basic; ‡delivered; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 11s 0d ($2.67) f. o. b. Ferromanganese £17 9s 6d ($84.63) delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d ($43.65) f. o. b.; **Silicon 2.50-3.00. British quotations are for basic openhearth steel. French, Belgian, Luxemburg, and German are for basic-bessemer steel.

ton ($1.21). This has not, however, had the effect of stimulating orders. Iron strip also shows a considerable fall in price as the makers have consistently followed the lead of pig iron producers in reducing selling rates. It is possible to operate for only about three days a week and much of the capacity in South Staffordshire is idle.

Demand for heavy steel is small, makers having to be content with specifications for small quantities, usually given out with an urgent request for immediate delivery. The works are operating uneconomically and suggestion that heavy steel should be reduced in price is vigorously contested. Shipbuilding demand is lower than for years. This idleness is also responsible for idle chain works in the South Staffordshire district which has been noted for generations as the center of the chainmaking industry.

Representatives from the South Wales district report that the tone of the tin plate market is brighter than for a long time. Business apparently has been stimulated by low prices now quoted, usually around 14s ($3.39) per basis box. Good inquiries have come from the export market, including Australia. In a few cases works have booked orders for delivery to the end of this year and in one or two instances work is provided for a month or six weeks ahead. The fluctuation of tin prices, however, is likely to have a disquieting influence. Though there is some improvement in business available for galvanized sheetmakers, any wide increase in demand is still lacking. As compared with three months ago the basis for galvanized sheets shows a drop of £1 5s ($6.08) as most works will now accept £9 15s ($47.47) for a good shipping order.

The steel scrap market is practically stagnant.

German Steel Producers Earn Fair Profits

Berlin — The Mannesmann-Roehrenwerke reports that the output of tubes during first quarter decreased by 10 per cent from the preceding quarter, and the output of coal decreased by 6 per cent. A dividend of 6 per cent was declared. The annual report emphasizes the necessity of reducing production costs to bring them to the same level as those of the rest of Europe.

The report of the Ferrostahl, A.G., a subsidiary of the Gutehoffnungshutte, states that for the first financial year a profit of 102,678 marks ($24,500) was realized. No dividend was declared. This concern was formed to merge the various commercial undertakings of the Gutehoffnungshutte, and the capital is 4,000,000 marks ($1,520,000).

Belgian Steel Trade Feels Improvement But Stability Is Not Demonstrated

Brussels—The tendencies of the Belgian iron and steel market vary according to different products. Merchant bars are weak, while semifinished steel products are firm. There is no appreciable change in structural steel, but plates and sheets tend to rise materially. The general situation is, undoubtedly, better than a few weeks ago, but the improvement does not appear sufficiently established to justify regarding it as permanent. Recently events apparently have stopped the downward trend of prices. Now that the first effects of the Hoover proposals have subsided, there will be a period during which the effects of the moratorium scheme on world economy will be under observation, and much depends on the results of negotiations.

The pig iron market is calm and production is restricted, since only 44 blast furnaces were operating at the end of May, against 54 a year previously. In semifinished steel, sheet bars have enjoyed something of a boom and have been in demand at £3 9s ($16.70), compared with £3 5s ($15.75) a week before. Other semifinished steel products are firm, but have not risen to such an extent. Six-inch blooms are £3 1s ($14.80), and 2-inch billets are £3 4s ($15.55). Structural steel is irregular and beams are quoted at between £3 5s 6d and £3 6s ($15.90 and $16) for normal sizes, although certain works, in particular Sambre-et-Moselle, are quoting £3 8s ($16.50), but they do not seem to have obtained any orders at that price. British standard sizes are quoted at 1s (24.00c) extra. The merchant bar market is not quite so active as a week ago and prices have dropped by about 1s (24.00c), the average quotation now being about £3 11s ($17.20).

An encouraging sign is the return to the market of inquiries from India for important tonnages to be delivered within three to five weeks, for Bombay and Madras. There is hardly any competition from Germany in semifinished steel, probably owing to orders recently obtained from Soviet Russia.

French Production Off

Paris—Pig iron output in France in May was measurably below that of April and considerably lower than in May, 1930. Steel ingots and castings lost only 1000 tons from April but were well below May last year. Comparisons follow, in metric tons:

Mon. ave.	Iron ore	Pig iron	Steel ingots and castings
1913	3,588,000*	756,000*	581,000*
1928	4,094,000	832,000	792,000
1929	4,220,000	864,000	808,000
1930	4,038,000	841,000	783,000
1931			
Jan.	3,802,000	801,000	746,000
Feb.	3,396,000	726,000	693,000
March	3,565,000	775,000	722,000
April	3,306,000	739,000	675,000
May	3,194,000	725,000	674,000

*In present boundaries.

French Exports Diminish

Paris—Exports of pig iron, ferroalloys and other iron and steel products from France in May were well below those of April while imports were the same as in the preceding month. Imports were mostly of semifinished and merchant steel, plates and sheets. Comparisons follow, in metric tons:

	IMPORTS		EXPORTS	
Mon. ave.	Pig iron and ferro-alloys	Steel*	Pig iron and ferro-alloys	Steel†
1928	5,000	9,500	54,000	343,000
1929	4,000	14,000	48,000	281,000
1930	14,000	21,000	45,000	273,000
1931				
Jan.	11,000	23,000	42,000	246,000
Feb.	14,000	22,000	44,000	265,000
March	12,000	19,000	44,000	265,200
April	9,000	16,000	41,000	249,000
May	8,000	16,000	32,000	232,200

The above figures include returns from the Saar district.

*Semifinished steel, plates and sheets, tin plate, steel tubes, steel scrap.

†Ingots, semifinished steel, merchant bars, structural steel, steel tubes, wheels and tires, rails, hoops and bands, wire rod and wire products, plates and sheets, tin plate, steel scrap.

Belgian Trade Steady

Brussels—Exports of pig iron, ferroalloys and other iron and steel products from Belgium and Luxemburg in April gained slightly over March. Scrap exported totaled 21,364 tons.

Imports of pig iron into Belgium and Luxemburg in April were less than in March. Comparative figures follow, in metric tons:

	IMPORTS		EXPORTS	
Mon. ave.	Pig iron	Other iron and steel	Pig iron	Other iron and steel
1928	45,910	38,000	8,240	380,000
1929	56,150	37,000	10,090	394,500
1930	33,350	28,000	9,600	343,400
1931				
Jan.	25,432	28,400	7,980	285,300
Feb.	22,943	30,650	11,015	321,035
March	22,031	23,300	7,771	325,000
April	19,610	23,900	8,780	331,600

Mill Products

Base price cents per pound f.o.b. mill except otherwise specified. Copper and brass product prices based on 8.00c, Conn., for copper

Sheets	
Yellow brass (high)	15.50
Copper, hot rolled	17.87½
Lead, full sheets (cut ½c more)	8.25
Zinc sheet (100-lb. base)	9.00
Tubes and Pipes	
Seamless yellow brass (high)	20.37½
Seamless copper	20.37½
Rods	
Yellow brass (high, full turnings)	13.75
Naval brass	14.87½
Anodes	
Copper, untrimmed	15.37½
Wire	
Yellow brass (high)	16.00

Old Metals

Dealers' buying prices, cents lb.

No. 1 Composition Red Brass	
New York	4.75 to 5.00
Chicago	4.75 to 5.00
Cleveland	5.00 to 5.50
St. Louis	4.50
Heavy Yellow Brass	
New York	3.00 to 3.25
Heavy Copper and Wire	
New York	5.75 to 6.00
Boston	5.25 to 5.50
Chicago	5.25 to 5.50
Cleveland	5.00 to 5.50
St. Louis	4.75 to 5.00
Composition Brass Borings	
New York	4.25 to 4.50
Yellow Brass Tubing	
Cleveland	3.00 to 3.25
Light Copper	
New York	4.75 to 5.00
Chicago	4.75 to 5.00
Cleveland	4.50 to 5.00
St. Louis	4.50
Light Brass	
Boston	2.00 to 2.25
Chicago	2.75 to 3.00
Cleveland	2.25 to 2.50
St. Louis	2.50 to 2.75
Zinc	
New York	1.25 to 1.50
Cleveland	1.25 to 1.50
St. Louis	1.50
Aluminum	
Clippings, soft, Cleveland	12.50 to 14.00
Clippings, hard, Cleveland	8.50 to 10.00
Borings, Cleveland	4.50 to 5.00
Mixed cast, Cleveland	4.50 to 5.00
Mixed cast, Boston	3.75 to 4.00
Mixed cast, St. Louis	4.00

Secondary Metals

Remelt alumnium No. 12	9.00 to 10.50
Brass ingots, 85-5-5-5	8.12½

Metals

Prices Are Firmer and Markets More Cheerful After Period of Uncertainty—New Buying Lags

New York—Nonferrous metal prices are firmer and sentiment more cheerful after two or three weeks of uncertainty. This is especially true of copper, which had sold down to 7.75c.

Changes of mood in the metal market have depended largely on the tone of financial news from Europe. Prices of brass and copper mill products continue on an 8-cent copper basis. New business is extremely light.

Copper—A little business has been done the past few days at 8.00c, Connecticut, and all prices under this level have disappeared. In this recovery, foreign affairs have been important, but some authorities assert that the outlook for lower production also has aided the market. Export business in the past few days has been good, but domestic light. Users in this country are believed to be well covered on needs for a number of months ahead, while foreign users are not so well protected.

Zinc—New business in prime western has been light, but smelters have been firm because of their knowledge that curtailment has put production on a par with consumption. The ore market remains at $23 a ton. It is said that a little buying would quickly firm the price to 4.00c, compared with the recent low point of 3.20c.

Tin—When tin was set back to 24.00c several days ago, consumers became interested and bought more freely than in some time. This action, together with progress in the foreign debt situation, sent the price above 25.00c. But at the higher level buyers generally showed little interest. Some progress is being made in balancing supplies against consumption, but at this time of year consumption also is likely to decrease.

Lead—New business is very light, but some buying continues almost every day, mostly for August shipment. Prices are firm.

Aluminum—Shipments are regular, but unusually small. Prices are steady except for certain grades of alloy scrap and No. 12 remelt.

Coke By-Product Prices Steady; Benzol Scarce

New York—Motor benzol is in short supply as demand holds against curtailed production. Some plants are behind in delivery. Toluol buying is about even with output. Xylol and solvent naphtha are unchanged in volume and price. Prices for distillates generally are at the minimum of the quoted range. Edgewater, Md., arsenal, chemical warfare division, takes bids July 24 on 5500 gallons of benzol. Spot movement in naphthalene is brisk, buying comparing well with previous years. Phenol is unchanged.

Sulphate of ammonia prices are down $4.50 a ton following failure of the world nitrate cartel to reach an agreement on prices.

Coke By-Products

	Spot
Per Gallon, Producers' Plants, Tank Lots	
Pure benzol	$0.18 to 0.19
90 per cent benzol	0.18 to 0.19
Toluol	0.27 to 0.29
Solvent naphtha	0.24 to 0.25
Commercial xylol	0.24 to 0.25
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.16 to 0.17
Per Pound at Producers' Plants	
Naphthalene flakes	3.75 to 4.75
Naphthalene balls	4.75 to 5.75
Per 100 Pounds Atlantic Seaboard	
Sulphate of ammonia	$1.375

Quicksilver Down at $93

New York—Quicksilver in small spot lots is $93 a flask, and shipment from the West $90.

Prices of the Week, Cents a Pound

	Copper: Electro delivered	Copper: Lake delivered	Copper: Casting refinery	Straits Tin: New York Spot	Straits Tin: New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 98-99%	Spot Antimony	Ingot Nickel
July 15	7.75	8.00	7.50	24.10	24.55	4.40	4.22½	3.90	22.90	6.85	35.00
July 16	7.75	8.00	7.50	24.75	25.12½	4.40	4.22½	3.90	22.90	6.82½	35.00
July 17	7.87½	8.00	7.62½	25.30	25.65	4.40	4.22½	3.90	22.90	6.75	35.00
July 18	8.00	8.12½	7.75	25.25	25.60	4.40	4.22½	3.90	22.90	6.75	35.00
July 20	8.00	8.12½	7.75	25.25	25.50	4.40	4.22½	3.90	22.90	6.75	35.00
July 21	8.00	8.12½	7.75	25.00	25.30	4.40	4.22½	3.90	22.90	6.75	35.00

Machinery

SUMMER recession is marked throughout the machine tool industry and several leading builders have avoided complete shutdowns only by undertaking contract work of various kinds. Government orders are growing scarce and the best business which several companies have is that originating in Italy and Russia. Several machine tool builders lately have adopted the plan of holding operating exhibits of their new machines in their own plants. Response has been gratifying, prospects having come willingly from considerable distances to make first-hand studies of the production possibilities which are claimed.

New York—With many plants down for two and three weeks, machine tool buying and inquiry is at a low ebb. A few tools are up, but July will be a low month with most dealers and builders. Awards still pend on 16 lathes for the Brooklyn navy yard, action being expected within the next week. Ball bearing plants in Connecticut are closing and curtailing production during the remainder of July. New inquiry is the lightest of the year. Railroads are out of the market. A list is up for the board of transportation shops, but early action is unlikely.

Worcester, Mass.—The government's delay in closing on schedules for lathes which have been open for weeks is the latest discouraging note to creep into the machinery market. Action is expected this week, however, barring further delay on a schedule for Brooklyn navy yard pending since last month. Representatives of local builders will be in Washington during the week to close the orders.

Since the government is practically the only buyer now present in the market, lathe builders hope for official action to keep the wheels turning. In the meantime there is little domestic inquiry for lathes, drills, or grinders. Grinder manufacturers are being supported mainly by orders from abroad, these orders originating principally with Italian and Russian interests.

Possible effect of economic difficulties in Germany on the Worcester machine industry is being watched for closely.

Pittsburgh—Activity in the machinery market is spotty but shows a slight improvement recently in orders and inquiry. Business is confined almost entirely to individual tools and what inquiry does appear is scattered and covers small lots.

Occasional inquiries continue to be received from the Westinghouse Electric & Mfg. Co. Railroads are practically out of the market. Heavy equipment builders continue well engaged although new business recently has been light.

Cleveland—Were it not for the fact that contract work in considerable volume had been undertaken recently by some of the leading machine tool builders in this district, it is probable that by this time complete shut-downs would have been necessary. As it is, skeleton organizations are being maintained in spite of the depth of the summer recession.

Companies which have placed on exhibition in their own plants new models of machines having important production features, find that many prospects are willing to come considerable distances to make first-hand studies of the possibilities of the new equipment. Although immediate orders do not follow in many cases, re-equipment plans undoubtedly are being laid to include the improved machines, which plans will go into effect promptly at the first definite signs of general business recovery.

Chicago—Several machine tool dealers in this territory are preparing to bid on $50,000 to $60,000 worth of equipment for St. Louis schools. Further action on the $17,000 inquiry for Austin high school, Chicago, resulted this week when the purchasing committee of the board heard objections to previous recommendations, based on the recent specifications.

About 50 machine tools of the United school of mechanical trades, 168 North Clinton street, Chicago, were sold the first of the week at mortgagee auction. Chicago board of education is inquiring for a ½-inch electric drill, grinders and woodworking equipment for the Jackson junior high school. The board also has on inquiry a 30-inch lathe for its electrical repair shop. Indiana state prison at Michigan City, Ind., is taking bids for a small amount of shop equipment. Northern Pacific railroad will buy a hand shear and crank pin turning machine, while Santa Fe has added a metal band saw to the remainder of its inquiry still before the market.

Many light manufacturing plants are down, and sales have been negligible. Some houses see signs of reviving interest for later in the year. A manufacturer in the district may buy a small number of presses, and several miscellaneous feelers are out. Billing this month will be the lightest in years, as dealers had virtually no carry-over from June.

May Business Disappoints German Machine Builders

Whereas in former years the receipt of orders in the German machine industry generally increased during May, the situation did not improve in any way during May, 1931, according to German trade information received by the department of commerce from the Berlin office.

Inquiries from foreign and domestic customers, which had been somewhat more numerous in April than in the previous months, showed no further increase in May. Furthermore, they did not lead to any larger number of transactions so that the receipt of orders during May was no better than in the previous month.

The average weekly working time remained unchanged at about 42 hours and the degree of occupation amounted to 44.7 per cent of capacity.

Crane Orders Show Gain During Month of June

New York—New orders increased in June while shipments dropped slightly, according to the Overhead Electric Crane institute. Unfilled orders on July 1 were the same number as the previous month, but their value was lower. Shipments included 29 units with a tonnage capacity of 1030, valued at $409,714, compared with 32 units with a tonnage capacity of 614 valued at $309,664.43 in May.

New orders totaled 29 cranes with a tonnage capacity of 830½, valued at $261,096. This compares with 19 units, tonnage capacity, 779 valued at $306,849 in May. Unfilled orders on July 1 were 81 units, tonnage capacity 3017½, valued at $1264, compared with 81 units, tonnage capacity 3217, valued at $1,412,987 on June 1.

Steel Castings Meet High-Pressure Service Demands

(*Concluded from Page* 32)

rel pump body made for the Worthington Pump & Machinery Corp., New York. This casting was designed to stand up under exceptionally severe service conditions and is an excellent example of a type of large-size liquid pump casting which must be dependable and which modern steel foundrymen are daily being called on to produce.

The large number of pressure steel castings being produced by American foundries gives an idea of the extent to which the manufacture of special-purpose castings on a tonnage basis has become scientifically controlled. Continuous production of satisfactory work has been an important factor in dispelling any uncertainty that may exist as to the reliability of steel castings for high-pressure applications.

Safety Is Essential

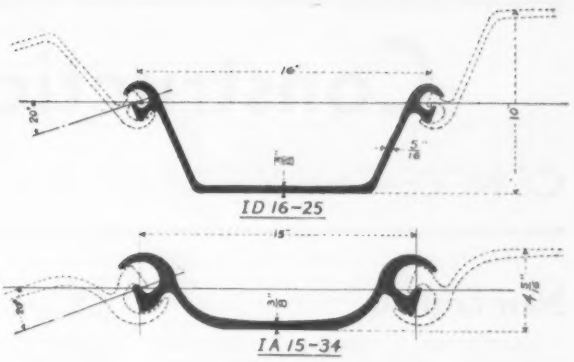
Absolute safety is one of the prime requisites for high-pressure castings. They are therefore subjected to tests in which pressures two, three, or four times the working pressure are applied. The fact that failures in cast-steel pressure vessels are rare occurrences is an excellent testimonial to the painstaking care with which they are engineered throughout.

Steel castings of this class are made in a large variety of sizes and shapes, from those weighing a few pounds to massive ones weighing many tons, and from the simplest straight cylindrical pipe to the most intricate and complicated forms. It is evident, therefore, that steel castings for high-pressure high-temperature work are filling an important role in the operations of modern industries where the material used must be economical and dependable.

Thrustor, Not Electromagnet Operates Hoist Brake

In the description of an automatic hoist brake on Page 44 of the July 16 issue of STEEL, the following statement appeared: "In operation, the electromagnet at right exerts a pressure to keep the brake released." The device serving this function is not an electromagnet but a thrustor which operates on an entirely different principle. The thrustor is a product of the General Electric Co., Schenectady, N. Y.

The hoist brake, which functions automatically to halt a falling load and provides a new factor of safety in the erection of structural steel, was designed by Robert C. McCord, vice president, Post & McCord, steel contractors, New York, and is manufactured by the Lidgerwood Mfg. Co., Elizabeth, N. J.



Sketch showing dimensions of two new sections of steel sheet piling

Inland Adds Sheet Piling To Line of Products

To broaden the range of its products and to meet more completely the needs of consumers, Inland Steel Co., Chicago, announces the addition of steel sheet piling to its line. Thus far, only two sections, designated as IA 15-34 and ID 16-25 are made, but other sections will be added shortly.

The two sections now produced are shown in the accompanying illustration. The manufacturer claims that in addition to high strength and good driving qualities, the sections feature a particularly strong interlock.

Specifications of the two sections are as follows:

	IA	ID
Section	15-34	16-25
Weight per foot, pounds..	42.50	33.32
Weight per square foot of wall, pounds	34.00	25.00
Moment of inertia, inches^4	19.10	49.60
Section modulus per single section, inches^3.....	8.42	13.44
Section modulus per lineal foot of wall, inches^3	6.74	10.08
Radius of gyration, inches	1.23	2.25

Completes Construction of Continuous Mill To Roll 92-Inch Plates

CONSTRUCTION of what is claimed to be the largest continuous plate mill in the world has been completed by the United Engineering & Foundry Co., Pittsburgh, for Illinois Steel Co., South Chicago, Ill. Built within a year, this is believed to be a record for such a massive piece of machinery.

Considered to be the largest installation ever made in the world for rolling any steel product, the mill contains the greatest number of large pieces of equipment in any existing plant. Motors approximating 30,000 horsepower will operate the mill and the plates are manipulated entirely by mechanical means.

Plates up to 92 inches wide can be rolled continuously in lengths up to 140 feet at a delivery speed varying from 350 to 700 feet per minute. Total length of the mill from the soaking pits to the finishing end is 2100 feet, or more than one-third of a mile.

The vertical edging mill, a component part, is understood to be the largest ever built and the gear drive for the roughing stand probably is the largest yet attempted. The latter has two gears 21 feet 8 inches in diameter with teeth 6 feet wide across the face.

Continuous operation is carried out to the maximum degree. Starting with an ingot, the steel passes through a universal slabbing mill, the arrangement being such that the finished plate can be rolled either in one heat or by reheating the slab in continuous slabbing furnaces.

Leaving the slabbing mill, the steel goes through one stand of scale-breaking rolls, three stands of 2-high roughing rolls, two vertical edging roll stands and then six stands of 4-high finishing rolls. The 4-high mills are of roller-bearing type with bearings of tremendous size.

After passing through the continuous plate mill, the plate goes through plate leveling machines, is carried over spool-type cooling conveyors; goes to the plate turnover for inspection and finally passes through various types of shears, one type of which is considered remarkable for accuracy and method of handling.

The entire mill is under electric control, both for controlling the thickness of plate and operation of side guides and looping apparatus. Driving motors are adjustable speed.

Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

New England

HARTFORD, CONN. — Engineering department, city hall, has awarded contract to C. W. Blakeslee & Sons Inc., 58 Waverly street, New Haven, for a pumping station.

BOSTON—Boston Elevated Railway Co., 31 St. James avenue, will extend and improve its power plant. Cost is estimated at $70,000.

WALTHAM, MASS. — City council plans construction of a high pressure pumping plant on Cedarwood street. Cost is estimated at $50,000. Plans are being prepared.

New York

ALBANY—Welding, Boiler & Machine Shop has been incorporated with $10,000 capital by N. B. Silberg.

BROOKLYN—Bureau of supplies and accounts, navy department, Washington, will receive bids July 28 on schedule 6166 for one universal turret lathe.

BROOKLYN—Plant of the Majestic Metal Spinning Co., 61 Navy street, manufacturer of lighting fixtures and metal specialties, recently was damaged by fire.

BUFFALO—Aluminum & Metal Products Corp., Ellicott and St. Paul streets, whose incorporation recently was noted, advises through George Rosing, secretary-treasurer, that the company has leased a plant. Equipment needs possibly to develop later include feed rolls and automatic machinery. Leonard J. Simon is president. Company announces that it has taken over the W. A. Eckert Mfg. Co. (Noted July 16.)

JAMESTOWN—Maher Iron Works is having plans prepared for a foundry and machine shop to be located at 20 Taylor street. A 36-inch and a 46-inch cupola will be installed. Gray iron castings will be made.

NEW YORK—Correct Die Cutting Works has been incorporated with $10,000 capital by R. J. Cobs, 160 Broadway, to make patterns.

WATERVLIET—Watervliet Iron & Brass Foundry Inc. is planning expansion of plant facilities. Company operates a brass, bronze and aluminum foundry.

New Jersey

ELIZABETH—Utility Products Co. has been incorporated with 2500 common shares by Sorg, Duncan & Bailey, 1060 Broad street, Newark, N. J., to manufacture mechanical and electrical devices.

MONTCLAIR—Moeltner Co. Inc. has been incorporated with 300 common shares by Nathan A. Whitfield, to engage in sheet metal work.

NEWARK—Orange Mfg. Co., manufacturer of metal goods, 190 Emmet street, has secured plant space at 63 Hoyt street for larger quarters.

PALMERTON—New Jersey Zinc Co., 160 Front street, New York, plans to erect a new mill here. Company engineering department is in charge. Estimated cost, $100,000.

Pennsylvania

PHILADELPHIA—Jewel Engineering Co. has been incorporated with $5000 capital by Samuel Schimmel, 616 Westview street, to manufacture and sell refrigerators and appliances.

PHILADELPHIA—Bureau of supplies and accounts, navy department, Washington, will receive bids July 28 on schedule 6181 for one internal grinder machine and on schedule 6189 for one universal turret lathe.

PHILADELPHIA—Duoflex Piston Ring Co., Fifteenth street and Mt. Vernon avenue, has let contract to Golder Construction Co., Market Street National Bank building, for plant alterations and additions at 2000 South Seventy-first street. H. B. Tobias, 112 South Sixteenth street, is architect.

Ohio

BOWLING GREEN—City, W. W. Rust service director, will receive bids about Aug. 1 for sewage disposal plant and equipment, to cost $280,000. A. H. Smith & Niles, 1527 Nicholas building, Toledo, O., are engineers.

CLEVELAND—James H. Griswold, Guarantee Title building, is building a machine shop addition at 1236 East 152nd street. Cost is estimated at $2000.

CLEVELAND—Sta-Brite Equipment Corp., recently organized, has leased 15,000 square feet of floor space at 5017 Euclid avenue for the manufacture of restaurant equipment.

CLEVELAND — Frosteel Inc. has moved its plant from Warren, O., to 4520 Lakeside avenue. Plant space of 5000 square feet has been leased for the fabrication of steel advertising and display articles.

DAYTON—Dayton Universal Motors Corp. has been incorporated with 1000 no par shares by Allaman, Funkhouser, Murr & Shellenberger, 515 Union Trust building.

DELPHOS—City, Hugh Bickel service director, has plans for a sewage disposal plant to cost $50,000. A. H. Smith & Niles, 1527 Nicholas building, Toledo, O., are engineers.

LANCASTER—Lancaster Aeronautical Service Co., J. C. Mackey general manager, will manufacture planes and establish a complete air service station. Some stock and equipment has been secured.

LEIPSIC—Ratchet Locknut Co. has been incorporated with $12,500 and 125 common shares by Ora R. Wade, Fostoria, O.

MANSFIELD — Taylor-Dise Co., manufacturer of radiant gas heaters and metal specialties, advises through G. W. Taylor, general manager, that the company will not repair or rebuild at this time, but will move into another plant which will take care of present requirements. Portion of equipment will be rebuilt. (Noted July 9.)

TOLEDO—Department of water, W. H. Schroeder service director, plans to purchase pumping equipment and auxiliary machinery for a waterworks project. Cost is estimated at $500,000. H. P. Jones & Co., Second National Bank building, is engineer.

WAPAKONETA — Holloware Foundry may be reopened, pending proposed marketing arrangements with outside interests. Plant would employ 50. George Trautman is manager.

Indiana

RICHMOND—City will call for new bids for equipment and construction in connection with improvement in the municipal light and power plant. Estimated cost, $850,000. (Noted Feb. 26.)

Michigan

CALUMET—Calumet & Hecla Consolidated Copper Co., 12 Ashburton place, Boston, has plans for construction of a laboratory here.

DETROIT—Detroit Ornamental Foundry Co. has been incorporated with $20,000 capital by Martin A. Miller, 1971 Guoin street, to manufacture metal castings.

DEARBORN—City is having plans prepared for a sewage disposal plant. Cost is estimated at $350,000. Hubbell, Hartgering & Roth are engineers. J. Ivan Dise, 2631 Woodward avenue, Detroit, is architect.

HOLLAND—Szekely Aircraft & Engine Co. is considering expansion of plant facilities. O. E. Szekely is president.

MUSKEGON—City department of engineering is preparing plans for construction of a sewage disposal plant to be built at a cost of $600,000. Decker, Shoecraft & Drury, Ann Arbor, Mich., are consulting engineers. Approximate cost, $600,000.

Illinois

CHICAGO—American Airways Inc., Robertson, Mo., will build a hangar unit here. Cost is estimated at $100,000.

CHICAGO—Board of education will

receive bids for machine tools and equipment for Lane Technical high school. Total cost will approximate $500,000.

CHICAGO — Run Mend Machinery Corp., 508 North Dearborn street, has been incorporated with 500 no par shares by Frank H. T. Potter, 1 North LaSalle street, to make machinery.

CHICAGO — Commonwealth Edison Co., 72 West Adams street, is having plans prepared for a substation at 11-15 North Wabash avenue. Holabird & Root, 333 North Michigan avenue, architects, will receive bids in about 30 days.

CHICAGO — Century Airlines Inc., 5032 West Sixty-third street, has a building permit for erection of a hangar unit, 160 x 220 feet, to cost $80,000. Huszagh & Hill, 6 North Michigan avenue, are architects.

CHICAGO—Neon Clock Corp., 1322 West Congress street, has been incorporated with $20,000 capital by Golden & Golden, 100 West Monroe street, to manufacture and deal in clocks.

CHICAGO—City has purchased a block at Kedzie and Sawyer avenues for construction of a shop and storage quarters in connection with the Chicago avenue intake tunnel project.

CHICAGO—Chicago Refrigerator Mfg. Co., 726 South Desplaines street, has been incorporated with $10,000 capital by Samuel Blair, 139 North Clark street, to manufacture refrigerators and fixtures.

CHICAGO—Western Electric Co., 11 South LaSalle street, has let contract to Ouilmette Construction & Engineering Co., 200 East Walton place, for a new manufacturing building at Twenty-sixth street and Cicero avenue, as a unit of the Hawthorne works. Construction cost, without equipment, will be about $1,000,000. Loading coils and loading coil cases will be manufactured. (Noted March 5.)

Southern States

MONTGOMERY, ALA.—Capt. M. A. McFadden, constructing quartermaster, Maxwell field, will receive bids Aug. 11 for boiler plants to be built here.

WASHINGTON—Bureau of supplies and accounts, navy department, will receive bids July 28 on schedule 6168 for one motor-driven exhaust fan.

FERNANDINO, FLA.—Plant of the Nassau Shipbuilding & Engine Co. recently was damaged by fire.

JACKSONVILLE, FLA.—White Shell Corp. proposes to build a crushing plant at Talleyrand avenue. Plans are by Robert M. Angas, Hildebrandt building. Estimated cost, $100,000.

JACKSONVILLE, FLA.—McMullen Airways advises that a hangar unit 50 x 60 feet has been completed and that the company plans lean-to shops on one side of the hangar in the near future. (Noted July 16.)

BOLDMAN, KY.—United Fuel Gas Co., Charlestown, W. Va., has started construction here of a compressor plant for its subsidiary, Warfield Natural Gas Co. Unit will cost $100,000. Project eventually will include intake pumping station and other facilities, with an expenditure of $1,000,000.

NEW ORLEANS—A. M. Lockett & Co. Ltd., Queen and Crescent building, has let contract to Austin Co., 16112 Euclid avenue, Cleveland, for a compressor building and auxiliary structures.

CHARLOTTE, N. C.—Interstate Granite Corp., R. E. Scoggins president, 607 West Seventh street, plans to build a plant and install cutting and handling machinery. Main structure, to be built on Hutchinson avenue, will be 40 x 250 feet. Engine room is included in plans. Cost is estimated at $100,000.

MEMPHIS, TENN.—Board of water commissioners, James Sheahan general superintendent, will receive bids Aug. 12 for two 4000 cubic feet per minute air compressors, centrifugal pumping units, two 625 kilovolt-ampere turbo-generator units, two 500 horsepower boilers, stokers and auxiliaries, coal and handling equipment. Bids will be received Aug. 14 for plant buildings, pipe, traveling crane and filter equipment. Fuller & McClintock, 170 Broadway, New York, are engineers. Thomas H. Allen, 65 McCall street, Memphis, is associate engineer. Cost of the entire project is estimated at $2,000,000.

NASHVILLE, TENN. — Plant of Eisele & Co. recently was damaged by fire. Loss is estimated at $250,000. Company manufactures surgical instruments and supplies.

NORFOLK, VA.—City council proposes to erect a warehouse and terminal at the municipal piers. Estimated cost, $200,000.

Missouri

ST. LOUIS—American Zero Plate Co. has been incorporated by D. C. McCord, 8040 Davis drive, to manufacture refrigerators.

ST. LOUIS—Board of education, 911 Locust street, will call for bids soon for machine toools and equipment. Estimated cost, $50,000.

Arkansas

MURFREESBORO—City council proposes to install pumping equipment and other items in connection with a waterworks project. T. T. Archer & Co., New England building, Kansas City, Mo., are architects.

Oklahoma

ARDMORE — Pride Sheet Metal Works has been incorporated with $3000 capital by W. A. Pride.

Texas

FT. WORTH—Ft. Worth Die Casting Co. has leased a building at 2233 Dallas pike for the manufacture of nonferrous castings. J. W. Allen is manager.

HOUSTON—Rival Safety Razor Corp. has leased a shop building at 2009 Capitol avenue for the manufacture of safety razors. Principal items of equipment have been secured. J. F. Barry is president and general manager.

SAN ANTONIO—Texas Machine & Foundry Co. has acquired property at 1407 Hoefgen street for a new shop building.

WACO—Evans-Strickland Machinery Co. has been incorporated with $2000 capital by George E. Evans, to manufacture industrial products.

Wisconsin

ASHLAND—Pacific & Atlantic Coal Docks Co. proposes to install equipment in a new coal briquetting plant to be built here. Cost of the project is estimated at $80,000.

MANITOWOC—Board of vocational education will receive bids until Aug. 8 for construction of the new 2-story vocational school, 80 x 320 feet, with extended wing, 53 x 100 feet. W. J. Raeubner is architect. (Noted Feb. 26.)

MILWAUKEE—Everbrite Sign Co., 1440 North Fourth street, is building a plant addition, 50 x 60 feet. Company manufactures steel and glass illuminated signs. C. J. Wamser is president.

Minnesota

BEMIDJI—City council is considering installation of a sewage disposal plant. Louis P. Wolff, Globe building, St. Paul, is engineer.

MINNEAPOLIS—City will erect a vocational training school, at a cost of approximately $400,000, bids to be taken soon.

MINNEAPOLIS—Warehouses of L. J. Mueller Furnace Co., 400 Ulysses street northeast, and of Marquette Mfg. Co., manufacturer of auto supplies, 409 Johnson street, recently were damaged by fire.

Iowa

GLIDDEN—City council is considering extensions to the municipal light and power plant, including installation of additional equipment. Estimated cost, $60,000.

Kansas

COFFEYVILLE—North American Car Corp., 327 South LaSalle street, Chicago, is rebuilding its manufacturing plant here, recently noted as damaged by fire. Expenditure will total about $500,000. Compressor room, boiler house, power house, tin shop, pipe shop, steel fabrication shop and other units will be built. F. O. Leffler is superintendent. (Noted April 2.)

Montana

RADERSBURG—Ohio-Keating Gold Mining Corp., care of C. L. Hewitt, manager, is reported to plan construction

of a mill here at a cost of approximately $80,000.

Nevada

HAWTHORNE—Bureau of supplies and accounts, navy department, Washington, will receive bids July 21 on schedule 6075 for one motor-driven grindstone, one flexible sander machine and one patternmakers lathe. Bids will be received on schedule 6081 for one pipe threading and cutting machine, on schedule 6082 for one metal sawing machine and on schedule 6083 for one universal milling machine.

Pacific Coast

NEWPORT, WASH.—H. L. Cooper, 101 Park avenue, New York, is preparing preliminary plans for interests said to plan construction of a hydroelectric plant on the Columbia river. Project will include erection of a power plant with 650,000 horsepower. Cost is estimated at $4,500,000.

PUGET SOUND, WASH.—Bureau of supplies and accounts, navy department, Washington, will receive bids Aug. 4 on schedule 6183 for one horizontal boring mill.

Dominion of Canada

BRILLIANT, B. C.—West Kootenay Power & Light Co. Ltd., Rossland, B. C., is considering erection of a power plant here to develop 30,000 horsepower. Approximate cost, $4,000,000.

NEW WESTMINSTER, B. C.—M. Y. Aivazoff, Vancouver, B. C., has secured an option on a 37-acre site on Lulu island here for the proposed construction of a drydock. Cost is estimated at $2,000,000.

VANCOUVER, B. C.—Bonna Pipe Co. is considering establishment of a plant in North Vancouver for the manufacture of pipe. Proposed plant will cost $250,000, according to F. J. O'Leary, consulting engineer.

ST. JOHN, N. B.—Corporate Steel Products Ltd., Montreal, Que., will establish a branch here for production and distribution, through a subsidiary recently organized, Atlantic Steel Products Ltd. About 100 will be employed.

GUELPH, ONT.—Guelph Stove Co., York road, is considering erection of a plant addition. Approximate cost, $50,000.

INGERSOLL, ONT.—Public utilities commission will call for bids soon for equipment for a new waterworks plant.

NEW TORONTO, ONT.—Ritchie Cut Stone Co. Ltd., 156 Bay street, Toronto, Ont., has let general contract to Anglin-Norcross Ltd., Temple building, Toronto, for a plant addition to consist of two units, 40 x 60 and 40 x 75 feet.

TORONTO, ONT.—Cole Snow Plow Co. Ltd. has been incorporated with $100,000 capital by Arthur W. Daniels, 274 Rhodes street, as an engineer and engine manufacturer.

TORONTO, ONT.—Radio & Industrial Products Co. Ltd. has been incorporated with $75,000 capital by John Stringer, 28 MacPherson street, as a manufacturer.

LONDON, ONT.—Watson-Bear Electrical Heating Co. Ltd. has been incorporated with 12,000 no par shares by Percy W. Bear, to manufacture and deal in heating and ventilating apparatus.

TORONTO, ONT.—Automatic Freewheel Gear Co. Ltd. has been incorporated with 15,000 no par shares by Wilfred C. James, Metropolitan building, as a manufacturer.

MONTREAL, QUE.—Canadian Industries Ltd., 1050 Beaver Hall hill, is reported to be negotiating for a site here for the erection of a plant for the manufacture of cellophane. Estimated cost, $1,500,000.

New Trade Publications

HAND TOOLS—Hand tools for the worker in sheet metal are illustrated in Bulletin No. 78 of the Niagara Machine & Tool Works, Buffalo. They include snips, roofing tools, hand tools and stakes for bench use.

HEATING FURNACE—Ryan, Scully & Co., Philadelphia, in Bulletin No. 15 describes its electric rivet and small parts heating furnace, type C. Description and illustrations are supplemented by tables of engineering data.

GAS INDICATOR—Bacharach Industrial Instrument Co., 7000 Bennett street, Pittsburgh, has issued a leaflet on its indicator for gas compressors by which cards may be marked to indicate condition of the valves, to the end that efficient operation may be achieved. It is illustrated.

OPEN-HEARTH CONTROL—A bulletin explaining automatic reversal of open-hearth furnaces has been issued by the Leeds & Northrup Co., Philadelphia. It explains how reversals are made automatically, what the system is, how it operates and its advantages. A list of users also is given.

PICKLING — Mesta Machine Co., Pittsburgh, has issued two booklets on pickling. One is devoted to modern pickling with Mesta pickling machines and the other to the machines themselves. Both are well illustrated and much information as to pickling methods is given.

PROPELLER FAN—Announcement of the addition of a new type of propeller fan to its line is made in a recent folder by Autovent Fan & Blower Co., 1805 North Kostner avenue, Chicago. Attention is called to its efficient performance and dimension data, performance data and prices are given.

WATTHOUR METER—Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., in a recent folder describes a recording demand watthour meter. The instrument measures both kilowatt hours and integrated, block-interval demand. Construction, operation, and distinctive features are outlined.

BRONZE—General properties and applications of Tobin bronze are outlined in publication B-16 recently issued by the American Brass Co., Waterbury, Conn. Structure of the metal and typical applications are illustrated, and physical properties and available forms are listed. The advantages of the metal are pointed out.

CONVEYING MACHINERY — Fairfield Engineering Co., Marion, O., has issued a catalog of standard and special elevating and conveying machinery for a wide variety of purposes. Installation diagrams are included and the effort is made to aid in selection of equipment best suited to a given need.

PEBBLE MILLS—Patterson Foundry & Machine Co., East Liverpool, O., in a current bulletin introduces its type AS pebble mills, a line of fine grinders, light and rugged. The mills are designed for use in all industries requiring fine grinding of various materials. Tables are given of capacities, dimensions, weights and engineering factors.

WIRE CLOTH—A bulletin by John A. Roebling's Sons Co., woven wire fabrics division, successor to the New Jersey Wire Cloth Co., Trenton, N. J., is devoted to wire cloth, wire netting and wire screening. It is well illustrated and much information is included as to various sizes and grades of these products.

SPEED REDUCERS — Worm gear speed reducers form the subject of a book by the W. A. Jones Foundry & Machine Co., 4401 West Roosevelt Road, Chicago. A chapter on selection of the correct worm gear reducer for the job is of practical interest. Other data of value and photographs of applications are contained in the volume.

FURNACES—Recent publications by the Babcock & Wilcox Co., 85 Liberty street, New York, include one on a laboratory furnace for quick melting of small samples of ceramic materials, nonferrous materials and for other laboratory purposes. Another is devoted to refractory cements and plastics, outlining their uses and methods of application. It is illustrated to show results of tests and actual installations. Tubular air heaters form the subject of a third, with typical installation views and setting plans.